WORKERS OF ALL COUNTRIES, UNITE!

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Materialism and the Dialectical Method

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Foreword

The present volume deals with the basic ideas of Marxist materialism and the dialectical method. A second volume will deal with the further development of these ideas in their application to society and the growth of human consciousness — historical materialism and the theory of knowledge.

I have tried to confine myself to a straightforward exposition of the leading ideas of dialectical materialism, so far as I myself have succeeded in understanding them, without burdening the exposition with digressions into more technical questions of philosophy, or with discussions about and polemics against any of the more abstruse philosophical theories, past and present, or with much of the argumentation about particular points which might be necessary to defend them against philosophical opponents.

I have done my best to limit the use of technical terms to the minimum, and to give an explanation of the meaning of all such terms as and when they occur.

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PART ONE: MATERIALISM

1. Party Philosophy

Every philosophy expresses a class outlook. But in contrast to the exploiting classes, which have always sought to uphold and justify their class position by various disguises and falsifications, the working class, from its very class position and aims, is concerned to know and understand things just as they are, without disguise or falsification.

The party of the working class needs a philosophy which expresses a revolutionary class outlook. The alternative is to embrace ideas hostile to the working class and to socialism.

This determines the materialist character of our philosophy.

Party Philosophy and Class Philosophy

Dialectical materialism has been defined as: "The world outlook of the Marxist-Leninist Party."[1]

This definition must appear a strange one, both to many politicians and to many philosophers. But we will not begin to understand dialectical materialism unless we can grasp the thought which lies behind this definition.

Let us ask, first of all, what conception of philosophy lies behind the idea expressed in this definition of party or — since a party is always the political representative of a class — class philosophy.

By philosophy is usually meant our most general account of the nature of the world and of mankind's place and

[1] Joseph Stalin, *Dialectical and Historical Materialism*, New York 1940.

destiny in it — our world outlook.

That being understood, it is evident that everybody has some kind of philosophy, even though he has never learned to discuss it. Everybody is influenced by philosophical views, even though he has not thought them out for himself and cannot formulate them.

Some people, for example, think that this world is nothing but "a vale of tears" and that our life in it is the preparation for a better life in another and better world. They accordingly believe that we should suffer whatever befalls us with fortitude, not struggling against it, but trying to do whatever good we can to our fellow creatures. This is one kind of philosophy, one kind of world outlook.

Other people think that the world is a place to grow rich in, and that each should look out for himself. This is another kind of philosophy.

But granted that our philosophy is our world outlook, the task arises of working out this world outlook systematically and in detail, turning it into a well-formulated and coherent theory, turning vaguely held popular beliefs and attitudes into more or less systematic doctrines. This is what the philosophers do.

By the time the philosophers have worked out their theories, they have often produced something very complicated, very abstract and very hard to understand. But even though only a comparatively few people may read and digest the actual productions of philosophers, these productions may and do have a very wide influence. For the fact that philosophers have systematized certain beliefs reinforces those beliefs, and helps to impose them upon wide masses

of ordinary people. Hence, everyone is influenced in one way or another by philosophers, even though they have never read the works of those philosophers.

And if this is the case, then we cannot regard the systems of the philosophers as being wholly original, as being wholly the products of the brain-work of the individual philosophers. Of course, the formulation of views, the peculiar ways in which they are worked out and written down, is the work of the particular philosopher. But the views themselves, in their most general aspect, have a social basis in ideas which reflect the social activities and social relations of the time, and which, therefore, do not spring ready-made out of the heads of philosophers.

From this we may proceed a step further.

When society is divided into classes — and society always has been divided into classes ever since the dissolution of the primitive communes, that is to say, throughout the entire historical period to which the history of philosophy belongs — then the various views which are current in society always express the outlooks of various classes. We may conclude, therefore, that the various systems of the philosophers also always express a class outlook. They are, in fact, nothing but the systematic working out and theoretical formulation of a class outlook, or, if you prefer, of the ideology of definite classes.

Philosophy is and always has been class philosophy. Philosophers may pretend it is not, but that does not alter the fact.

For people do not and cannot think in isolation from society, and therefore from the class interests and class

struggles which pervade society, any more than they can live and act in such isolation. A philosophy is a world outlook, an attempt to understand the world, mankind and man's place in the world. Such an outlook cannot be anything but the outlook of a class, and the philosopher functions as the thinking representative of a class. How can it be otherwise? Philosophies are not imported from some other planet, but are produced here on earth, by people involved, whether they like it or not, in existing class relations and class struggles. Therefore, whatever philosophers say about themselves, there is no philosophy which does not embody a class outlook, or which is impartial, as opposed to partisan, in relation to class struggles. Search as we may, we shall not find any impartial, non-partisan, non-class philosophy.

Bearing this in mind, then, we shall find that the philosophies of the past have all, in one way or another, expressed the outlook of the so-called "educated" classes, that is to say, of the exploiting classes. In general, it is the leaders of society who express and propagate their ideas in the form of systematic philosophies. And up to the appearance of the modern working class, which is the peculiar product of capitalism, these leaders have always been the exploiting classes. It is their outlook which has dominated philosophy, just as they have dominated society.

We can only conclude from this that the working class, if today it intends to take over leadership of society, needs to express its own class outlook in philosophical form, and to oppose this philosophy to the philosophies which express the outlook and defend the interests of the exploiters.

"The services rendered by Marx and Engels to the

working class may be expressed in a few words thus: they taught the working class to know itself and be conscious of itself, and they substituted science for dreams," wrote Lenin.[1]

"It is the great and historic merit of Marx and Engels that they proved by scientific analysis the inevitability of the collapse of capitalism and its transition to communism, under which there will be no more exploitation of man by man... that they indicated to the proletarians of all countries their role, their task, their mission, namely, to be the first to rally around themselves in this struggle all the toilers and exploited."[2]

Teaching the working class "to know itself and be conscious of itself," and to rally around itself "all the toilers and exploited," Marx and Engels founded and established the revolutionary theory of working-class struggle, which illumines the road by which the working class can throw off capitalist exploitation, can take the leadership of all the masses of the people, and so free the whole of society once and for all of all oppression and exploitation of man by man.

Marx and Engels wrote in the period when capitalism was still in the ascendant and when the forces of the working class were first being rallied and organized. Their theory was further continued by Lenin, in the period when capitalism had reached its final stage of monopoly capitalism or imperialism, and when the proletarian socialist revolution had begun. It was further continued by Stalin.

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[1] Lenin, *on Engels*, New York 1935.

[2] *Ibid.*

Marx and Engels taught that, without its own party, the working class certainly could not win victory over capitalism, could not lead the whole of society forward to the abolition of capitalism and the establishment of socialism. The working class must have its own party, independent of all bourgeois parties. Further developing the Marxist teachings about the party, Lenin showed that the party must act as the vanguard of its class, the most conscious section of its class, and that it is the instrument for winning and wielding political power.

To fulfil such a role, the party must evidently have knowledge, understanding and vision; in other words, it must be equipped with revolutionary theory, on which its policies are based and by which its activities are guided.

This theory is the theory of Marxism-Leninism. And it is not just an economic theory, nor yet exclusively a political theory, but a world outlook — a philosophy. Economic and political views are not and never can be independent of a general world outlook. Specific economic and political views express the world outlook of those who hold such views, and conversely, philosophical views find expression in views on economics and politics.

Recognizing all this, the revolutionary party of the working class cannot but formulate, and having formulated, hold fast to, develop and treasure its party philosophy. In this philosophy — dialectical materialism — are embodied the general ideas by means of which the party understands the world which it is seeking to change and in terms of which it defines its aims and works out how to fight for them. In this philosophy are embodied the general ideas by

means of which the party seeks to enlighten and organize the whole class, and to influence, guide and win over all the masses of working people, showing the conclusions which must be drawn from each stage of the struggle, helping people to learn from their own experience how to go forward towards socialism.

And so we see why it is that in our times a philosophy has arisen which expresses the revolutionary world outlook of the working class, and that this philosophy — dialectical materialism — is defined as "the world outlook of the Marxist-Leninist Party."

Experience itself has taught the party the need for philosophy. For experience shows that if we do not have our own revolutionary socialist philosophy, then inevitably we borrow our ideas from hostile, anti-socialist sources. If we do not adopt today the outlook of the working class and of the struggle for socialism, then we adopt — or slip into, without meaning to do so — that of the capitalists and of the struggle against socialism. This is why the working class party — if it is to be the genuine revolutionary leadership of its class, and is not to mislead its class by the importation of hostile capitalist ideas, and of policies corresponding to such ideas — must be concerned to formulate, defend and propagate its own revolutionary philosophy.

Class Philosophy and Truth

Against what has just been said about a class and party philosophy, the objection is bound to be raised that such a conception is a complete travesty of the whole idea of philosophy.

Class interests may incline us to believe one thing rather than another, some will say, but should not philosophy be above this? Should not philosophy be objective and impartial, and teach us to set class and party interests aside, and to seek only for the truth? For surely what is true is true, whether this suits some or other class interests or not? If philosophy is partisan — party philosophy — how can it be objective, how can it be true philosophy?

In reply to such objections, we may say that the working class standpoint in philosophy is very far indeed from having no concern for truth.

Is there no such thing as truth? Of course there is — and men are getting nearer to it. For different outlooks, partisan as they may be, are not on a level so far as nearness to truth is concerned. Every philosophy embodies a class outlook. Yes, but just as one class differs from another class in its social role and in its contribution to the development of society, so one philosophy embodies positive achievements in comparison with another in the working out of the truth about the world and society.

People are prone to believe that if we adopt a partisan, class standpoint, then we turn our backs on truth; and that, on the other hand, if we genuinely seek for truth, then we must be strictly impartial and non-partisan. But the contrary is the case. It is only when we adopt the partisan standpoint of historically the most progressive class that we are able to get nearer to truth.

The definition of dialectical materialism, therefore, as the philosophy of the revolutionary working-class party, is in no way incompatible with the claim of dialectical

materialism to express truth, and to be a means of arriving at truth. On the contrary. We have every right to make this claim, in view of the actual historical position and role of the working class.

Except for the working class, all other classes which have aspired to take the leadership of society have been exploiting classes. But every exploiting class, whatever its achievements, has always to find some way of disguising its real position and aims, both from itself and from the exploited, and of making out that its rule is just and permanent. For such a class can never recognize its real position and aims as an exploiting class, or the temporary character of its own system.

For example, in ancient slave society, Aristotle, the greatest philosopher of antiquity, made out that the institution of slavery was decreed by nature, since some men were by nature slaves.

In the heyday of feudal society the greatest philosopher of the middle ages, Thomas Aquinas, represented the entire universe as being a kind of feudal system. Everything was arranged in a feudal hierarchy,[1] with God surrounded by the chief archangels at the top. Everything depended on what was next above it in the system, and nothing could exist without God.

As for capitalism, it dissolves all feudal ties and, as Marx and Engels observed, "has left remaining no other nexus between man and man than naked self-interest, than callous

[1] A hierarchy is an order in which the things at the top rule over the things below them. Thus the serfs were at the bottom of the feudal hierarchy and the king was at the top. Similarly, the Pope is the head of the "Catholic hierarchy."

cash payment."[1] This was reflected in the beginnings of capitalist philosophy, especially in Britain.

This philosophy saw the world as consisting of independent atoms, each complete in itself, concerned only with itself, and all interacting. This was a mirror of capitalist society, as seen by the rising bourgeoisie. And by means of such ideas they succeeded, too, in disguising their own aims of domination and profit. Worker and capitalist were "on a level," each was a free human atom, and they entered into a free contract, the one to work, the other to provide capital and pay wages.

But the working class does not need any such "false consciousness" as is contained in such philosophies. It does not want to set up a new system of exploitation, but to abolish all exploitation of man by man. For this reason, it has no interest whatever in disguising anything, but rather in understanding things just as they really are. For the better it understands the truth, the more is it strengthened in its struggle.

Moreover, other classes have always wanted to perpetuate themselves and to last out for as long as they could. And so they have favoured philosophical "systems" which give themselves a permanent place in the universe. Such systems attempt to define the nature of the universe so as to represent certain things and certain relations as being necessary, eternal and unchangeable. And then they make it appear that a particular social system is a necessary part of the

[1] Karl Marx and Frederick Engels, *The Communist Manifesto*, Chapter I, New York 1948.

whole.

But the working class does not want to perpetuate itself. On the contrary, it wants to do away with its own existence as a class as quickly as possible, and to establish a classless society. Therefore, the working class has no use at all for any philosophical "system" which establishes any false permanence. Its class position and aims are such that it can afford to and needs to recognize and trace out the change, coming into being and ceasing to be of everything in existence.

Party philosophy, then, has a right to lay claim to truth. For it is the only philosophy which is based on a standpoint which demands that we should always seek to understand things just as they are, in all their manifold changes and interconnections, without disguises and without fantasy.

A Revolution in Philosophy

"The Marxian doctrine is omnipotent because it is true," wrote Lenin. "It is complete and harmonious, and provides men with an integral world conception which is irreconcilable with any form of superstition, reaction or defence of bourgeois oppression."[1]

And he further wrote:

"There is nothing resembling 'sectarianism' in Marxism, in the sense of its being a hidebound, petrified doctrine, a doctrine which arose away from the highroad of development of world civilization. On the contrary, the genius of

[1] Karl Marx, Frederick Engels, V.I. Lenin, Joseph Stalin, *On the Theory of Marxism*, Lenin, "The Three Sources and Three Component Parts of Marxism," New York 1948.

Marx consists precisely in the fact that he furnished answers to questions the foremost minds of mankind had already raised. His teachings arose as the direct and immediate continuation of the teachings of the greatest representatives of philosophy, political economy and socialism."[1]

Marxism is a revolution in philosophy. This revolution appears as the culmination of a whole great development of philosophical thought, in which the problems of philosophy were posed and took shape in the course of a series of revolutions, the highest point being reached in the classical German philosophy of the early nineteenth century. Marxism is thus the continuation and culmination of the past achievements of philosophy. And it is a continuation which puts an end to an epoch and constitutes a new point of departure. In comparison with past philosophies, it launches out on new lines. It puts an end to the "systems" of the past, and is a philosophy of an entirely new kind.

Marxism-Leninism is no longer a philosophy which expresses the world outlook of an exploiting class, of a minority, striving to impose its rule and its ideas upon the masses of the people, in order to keep them in subjection; but it is a philosophy which serves the common people in their struggle to throw off all exploitation and to build a classless society.

Marxism-Leninism is a philosophy which seeks to understand the world in order to change it. "The philosophers have only interpreted the world in various ways," wrote

[1] *Ibid.*

Marx. "The point, however, is to change it."[1] Therefore, if we could say of past philosophy that it has been an attempt to understand the world and man's place and destiny in it — an attempt necessarily conditioned by the class outlook, prejudices and illusions of the various exploiting class philosophers — we have to say of Marxist-Leninist philosophy that it is an attempt to understand the world in order to change the world and to shape and realize man's destiny in it. Dialectical materialism is a theoretical instrument in the hands of the people for use in changing the world.

Marxism-Leninism, therefore, seeks to base our ideas of things on nothing but the actual investigation of them, arising from and tested by experience and practice. It does not invent a "system," as previous philosophies have done, and then try to make everything fit into it.

Thus dialectical materialism is in the truest sense a popular philosophy, a scientific philosophy and a philosophy of practice.

"The discovery of Marx and Engels represents the end of the old philosophy, *i.e.* the end of that philosophy which claimed to give a universal explanation of the world," said A. A. Zhdanov.

"With the appearance of Marxism as the scientific world outlook of the proletariat there ends the old period in the history of philosophy, when philosophy was the occupation of isolated individuals, the possession of philosophical schools consisting of a small number of philosophers and

[1] Frederick Engels, *Ludwig Feuerbach*, Appendices, Karl Marx, "Theses on Feuerbach," XI, New York 1941.

their disciples, detached from life and the people, and alien to the people.

"Marxism is not such a philosophical school. On the contrary, it supersedes the old philosophy — the philosophy that was the property of a small elite, the aristocracy of the intellect. It marked the beginning of a completely new period in the history of philosophy, when it became a scientific weapon in the hands of the proletarian masses in their struggle for emancipation from capitalism.

"Marxist philosophy, as distinguished from preceding philosophical systems, is not a science above other sciences; rather, it is an instrument of scientific investigation, a method, penetrating all natural and social sciences, enriching itself with their attainments in the course of their development. In this sense, Marxist philosophy is the most complete and decisive negation of all preceding philosophy. But to negate, as Engels emphasized, does not mean merely to say 'no'. Negation includes continuity, signifies absorption, the critical reforming and unification in a new and higher synthesis of everything advanced and progressive that has been achieved in the history of human thought."[1]

The revolutionary characteristics of dialectical materialism are embodied in the two features of Marxist-Leninist philosophy which give it its name — dialectics and materialism.

In order to understand things so as to change them we must study them, not according to the dictates of any

[1] Andrei A. Zhdanov, *Essays on Literature, Philosophy, and Music*, Chapter II, New York 1950.

abstract system, but in their real changes and interconnections — and that is what is meant by dialectics.

We must set aside preconceived ideas and fancies about things, and strive to make our theories correspond to the real conditions of material existence — and that means that our outlook and theory are materialist.

In dialectical materialism, wrote Engels, "the materialist world outlook was taken really seriously for the first time and was carried through consistently..." For "it was resolved to comprehend the real world — nature and history — just as it presents itself to everyone who approaches it free from preconceived idealist fancies. It was decided relentlessly to sacrifice every idealist fancy which could not be brought into harmony with the facts conceived in their own and not in a fantastic connection. And materialism means nothing more than this."[1]

[1] Engels, *Ludwig Feuerbach*, Chapter IV.

2. Materialism and Idealism

Materialism is opposed to idealism since, while idealism holds that the spiritual or ideal is prior to the material, materialism holds that matter is prior. This difference manifests itself in opposed ways of interpreting and understanding every question, and so in opposed attitudes in practice.

While idealism takes many subtle forms in the writings of philosophers, it is at bottom a continuation of belief in the supernatural. It involves belief in two worlds, in the ideal or supernatural world over against the real material world.

In essence idealism is a conservative, reactionary force; and its reactionary influence is demonstrated in practice. Marxism adopts a consistent standpoint of militant materialism.

Materialism, and Idealism — Opposed Ways of Interpreting Every Question

Our philosophy is called Dialectical Materialism, said Stalin, "because its approach to the phenomena[1] of nature, its method of studying and apprehending them, is dialectical, while its interpretation of the phenomena of nature, its conception of these phenomena, its theory, is materialistic."[2]

Materialism is not a dogmatic system. It is rather a way of interpreting, conceiving of, explaining every question.

The materialist way of interpreting events, of conceiving of things and their interconnections, is opposed to the idealist way of interpreting and conceiving of them.

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[1] A *phenomenon,* plural *phenomena,* is anything which we observe.

[2] Stalin, *Dialectical and Historical Materialism.*

Materialism is opposed to idealism. With every question, there are materialist and idealist ways of interpreting it, materialist and idealist ways of trying to understand it.

Thus materialism and idealism are not two opposed abstract theories about the nature of the world, of small concern to ordinary practical folk. They are opposed ways of interpreting and understanding every question, and, consequently, they express opposite approaches in practice and lead to very different conclusions in terms of practical activity.

Nor are they, as some use the terms, opposite moral attitudes — the one high-minded, the other base and self-seeking. If we use the terms like this, we will never understand the opposition between capitalist and materialist conceptions.

For this way of speaking is, as Engels said, nothing but "an unpardonable concession to the traditional philistine prejudice against the word materialism resulting from the long-continued defamation by the priests. By the word materialism the philistine understands gluttony, drunkenness, lust of the eye, lust of the flesh, arrogance, cupidity, miserliness, profit-hunting and stock-exchange swindling — in short, all the filthy vices in which he himself indulges in private. By the word idealism he understands the belief in virtue, universal philanthropy and in a general way a 'better world', of which he boasts before others."[1]

Before trying to define materialism and idealism in general terms, let us consider how these two ways of

[1] Engels, *Ludwig Feuerbach*, Chapter II.

understanding things are expressed in relation to certain simple and familiar questions. This will help us to grasp the significance of the distinction between a materialist and an idealist interpretation.

First let us consider a very familiar natural phenomenon — a thunderstorm. What causes thunderstorms?

An idealist way of answering this question is to say that thunderstorms are due to the anger of God. Being angry, he arranges for lightning and thunderbolts to descend upon mankind.

The materialist way of understanding thunderstorms is opposed to this. The materialist will try to explain and understand thunderstorms as being solely due to what we call natural forces. For example, ancient materialists suggested that far from thunderstorms being due to the anger of the gods, they were caused by material particles in the clouds banging against one another. That this particular explanation was wrong, is not the point: the point is that it was an attempt at materialist as opposed to idealist explanation. Nowadays a great deal more is known about thunderstorms arising from the scientific investigation of the natural forces involved. Knowledge remains very incomplete, but at all events enough is known to make it quite clear that the explanation must be on materialist lines, so that the idealist explanation has become thoroughly discredited.

It will be seen that while the idealist explanation tries to relate the phenomenon to be explained to some *spiritual* cause — in this case the anger of God — the materialist explanation relates it to *material* causes.

In this example, most educated people today would

agree in accepting the materialist interpretation. This is because they generally accept the *scientific* explanation of natural phenomena, and every advance of natural science is an advance in the *materialist* understanding of nature.

Let us take a second example, this time one arising out of social life. For instance: Why are there rich and poor? This is a question which many people ask, especially poor people.

The most straightforward idealist answer to this question is to say simply — It is because God made them so. It is the will of God that some should be rich and others poor.

But other less straightforward idealist explanations are more in vogue. For example: it is because some men are careful and farsighted, and these husband their resources and grow rich, while others are thriftless and stupid, and these remain poor. Those who favour this type of explanation say that it is all due to eternal "human nature." The nature of man and of society is such that the distinction of rich and poor necessarily arises.

Just as in the case of the thunderstorm, so in the case of the rich and poor, the idealist seeks for some spiritual cause — if not in the will of God, the divine mind, then in certain innate characteristics of the human mind.

The materialist, on the other hand, seeks the reason in the material, economic conditions of social life. If society is divided into rich and poor, it is because the production of the material means of life is so ordered that some have possession of the land and other means of production while the rest have to work for them. However hard they may work and however much they may scrape and save, the non-

possessors will remain poor, while the possessors grow rich on the fruits of their labour.

On such questions, therefore, the difference between a materialist and an idealist conception can be very important. And the difference is important not merely in a theoretical but in a practical sense.

A materialist conception of thunderstorms, for example, helps us to take precautions against them, such as fitting buildings with lightning conductors. But if our explanation of thunderstorms is idealist, all we can do is to watch and pray. If we accept an idealist account of the existence of rich and poor, all we can do is to accept the existing state of affairs — rejoicing in our superior status and bestowing a little charity if we are rich, and cursing our fate if we are poor. But armed with a materialist understanding of society we can begin to see the way to change society.

It is clear, therefore, that while some may have a vested interest in idealism, it is in the interests of the great majority to learn to think and to understand things in the materialist way.

How, then, can we define materialism and idealism, and the difference between them, in general terms, so as to define the essence of the question? This was done by Engels.

"The great basic question of all philosophy, especially of modern philosophy, is that concerning the relation of thinking and being... The answers which the philosophers have given to this question split them into two great camps. Those who asserted the primacy of spirit to nature and therefore in the last instance assumed world creation in some form or another... comprised the camp of idealism.

The others, who regarded nature as primary, belong to the various schools of materialism."[1]

Idealism is the way of interpreting things which regards the spiritual as prior to the material, whereas materialism regards the material as prior. Idealism supposes that everything material is dependent on and determined by something spiritual, whereas materialism recognizes that everything spiritual is dependent on and determined by something material. And this difference manifests itself both in general philosophical conceptions of the world as a whole, and in conceptions of particular things and events.

Idealism and the Supernatural

At bottom, idealism is religion, theology. "Idealism is clericalism," wrote Lenin.[2] All idealism is a continuation of the religious approach to questions, even though particular idealist theories have shed their religious skin. Idealism is inseparable from superstition, belief in the supernatural, the mysterious and unknowable.

Materialism, on the other hand, seeks for explanations in terms belonging to the material world, in terms of factors which we can verify, understand and control.

The roots of the idealist conception of things are, then, the same as those of religion.

To believers, the conceptions of religion, that is to say, conceptions of supernatural spiritual beings, generally seem

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[1] Engels, *Ludwig Feuerbach*, Chapter II.

[2] V.I. Lenin, Selected Works, Vol. 11, "On Dialectics," New York 1943.

to have their justification, not, of course, in any evidence of the senses, but in something which lies deep within the spiritual nature of man. And, indeed, it is true that these conceptions do have very deep roots in the historical development of human consciousness. But what is their origin, how did such conceptions arise in the first place? We can certainly not regard such conceptions as being the products, as religion itself tells us, of divine revelation, or as arising from any other supernatural cause, if we find that they themselves have a natural origin. And such an origin can in fact be traced.

Conceptions of the supernatural, and religious ideas in general, owe their origin first of all to the helplessness and ignorance of men in face of the forces of nature. Forces which men cannot understand are personified — they are represented as manifestations of the activity of spirits.

For example, such alarming events as thunderstorms were, as we have seen, explained fantastically as due to the anger of gods. Again, such important phenomena as the growth of crops were put down to the activity of a spirit: it was believed that it was the corn spirit that made the corn grow.

From the most primitive times men personified natural forces in this way. With the birth of class society, when men were impelled to act by social relations which dominated them and which they did not understand, they further invented supernatural agencies doubling, as it were, the state of society. The gods were invented superior to mankind, just as the kings and lords were superior to the common people.

All religion, and all idealism, has at its heart this kind of

doubling of the world. It is dualistic, and invents a dominating ideal or supernatural world over against the real material world.

Very characteristic of idealism are such antitheses as: soul and body; god and man; the heavenly kingdom and the earthly kingdom; the forms and ideas of things, grasped by the intellect, and the world of material reality, perceptible by the senses.

This "doubling" of the world is carried to its furthest limits in subjective idealism, which ends by regarding the material world as a mere illusion and asserts that only the non-material world is real. The dualistic character of all idealism is most marked in subjective idealism, which posits a complete antithesis between the mechanistic system of the illusory material world and the "freedom" of the higher, non-material reality. This antithesis, disguised as it often is behind allegedly "scientific" and "empiricist" theorizing, characterizes all subjective idealist philosophies, from Berkeley to John Dewey.

For idealism, there is always a higher, more real, non-material world — which is prior to the material world, is its ultimate source and cause, and to which the material world is subject. For materialism, on the other hand, there is *one* world, the material world.

By idealism in philosophy we mean any doctrine which says that beyond material reality there is a higher, spiritual reality, in terms of which the material reality is in the last analysis to be explained.

At this point a few observations may be useful concerning some characteristic doctrines of modern bourgeois philosophy.

For nearly three hundred years there has been put forward a variety of philosophy known as "subjective idealism." This teaches that the material world does not exist at all. Nothing exists but the sensations and ideas in our minds, and there is no external material reality corresponding to them.

And then again, this subjective idealism is put forward in the form of a doctrine concerning knowledge: it denies that we can know anything about objective reality outside ourselves, and says that we can have knowledge of appearances only and not of "things in themselves."

This sort of idealism has become very fashionable today. It even parades as extremely "scientific." When capitalism was still a progressive force, bourgeois thinkers used to believe that we could know more and more about the real world, and so control natural forces and improve the lot of mankind indefinitely. Now they are saying that the real world is unknowable, the arena of mysterious forces which pass our comprehension. It is not difficult to see that the fashion for such doctrines is just a symptom of the decay of capitalism.

We have seen that, at bottom, idealism always believes in *two worlds,* the ideal and the material, and it places the ideal prior to and above the material. Materialism, on the other hand, knows one world only, the material world, and refuses to invent a second, imaginary, superior ideal world.

Materialism and idealism are irreconcilably opposed.

But this does not stop many philosophers from trying to reconcile and combine them. In philosophy there are also various attempted compromises between idealism and materialism.

One such attempted compromise is often known as "dualism." Such a compromise philosophy asserts the existence of the spiritual as separate and distinct from the material — but it tries to place the two on a level. Thus it treats the world of non-living matter in a thoroughly materialist way: this, it says, is the sphere of activity of natural forces, and spiritual factors do not enter into it and have nothing to do with it in any way. But when it comes to mind and society, here, says this philosophy, is the sphere of activity of spirit. Here, it maintains, we must seek explanations in idealist and not in materialist terms.

Such a compromise between materialism and idealism, therefore, amounts to this — that with regard to all the most important questions concerning men, society and history we are to continue to adopt idealist conceptions and to oppose materialism.

Another compromise philosophy is known as "realism." In its modern form, this philosophy has arisen in opposition to subjective idealism.

The "realist" philosophers say that the external material world really exists independent of our perceptions and is in some way reflected by our perceptions. In this the "realists" agree with the materialists in opposition to *subjective* idealism; indeed, you cannot be a materialist unless you are a thorough-going realist on the question of the real existence of the material world.

But merely to assert that the external world exists independent of our perceiving it, is not to be a materialist. For example, the great Catholic philosopher of the middle ages, Thomas Aquinas, was in this sense a "realist." And to this day most Catholic theologians regard it as a heresy to be anything but a "realist" in philosophy. But at the same time they assert that the material world, which really exists, was created by God, and is sustained and ruled all the time by the power of God, by a spiritual power. So, far from being materialists, they are idealists.

As for modern "realism," it concedes to materialism the bare existence of matter and, for the rest, is ready to concede everything to idealism.

Moreover, the word "realism" is much abused by philosophers. So long as you believe that something or other is "real," you may call yourself a "realist." Some philosophers think that not only is the world of material things real, but that there is also, outside space and time, a real world of "universals," of the abstract essences of things: so these call themselves "realists." Others say that, although nothing exists but the perceptions in our minds, nevertheless these perceptions are real: so these call themselves "realists" too. All of which goes to show that some philosophers are very tricky in their use of words.

The Basic Teachings of Materialism in Opposition to Idealism

In opposition to all the forms of idealism, and of tricky compromises between materialism and idealism, the basic teachings of materialism can be formulated very simply and clearly.

To grasp the essence of these teachings we should also understand what are the main assertions made in every form of idealism. There are three such main assertions of idealism.

1. Idealism asserts that the material world is dependent on the spiritual.

2. Idealism asserts that spirit, or mind, or idea, can and does exist in separation from matter. (The most extreme form of this assertion is subjective idealism, which asserts that matter does not exist at all but is pure illusion.)

3. Idealism asserts that there exists a realm of the mysterious and unknowable, "above," or "beyond," or "behind" what can be ascertained and known by perception, experience and science.

The basic teachings of materialism stand in opposition to these three assertions of idealism.

1. Materialism teaches that the world is by its very nature material, that everything which exists comes into being on the basis of material causes, arises and develops in accordance with the laws of motion of matter.

2. Materialism teaches that matter is objective reality existing outside and independent of the mind; and that far from the mental existing in separation from the material, everything mental or spiritual is a product of material processes.

3. Materialism teaches that the world and its laws are fully knowable, and that while much may not be known there is nothing which is by nature unknowable.

The Marxist-Leninist philosophy is characterized by its absolutely consistent materialism all along the line, by its making no concessions whatever at any point to idealism.

Thus Stalin points out:

"(a) Contrary to idealism, which regards the world as the embodiment of an 'absolute idea,' a 'universal spirit,' 'consciousness,' Marx's philosophical materialism holds that the world is by its very nature material, that the multifold phenomena of the world constitute different forms of matter in motion... and that the world develops in accordance with the laws of movement of matter and stands in no need of a 'universal spirit.'

"(b) Contrary to idealism, which asserts that only our mind really exists... the Marxist materialist philosophy holds that matter, nature, being is an objective reality existing outside and independent of our mind; that matter is primary, since it is the source of sensations, ideas, mind, and that mind is secondary, derivative, since it is a reflection of matter, a reflection of being; that thought is a product of matter which in its development has reached a high degree of perfection, namely, of the brain, and the brain is the organ of thought; and that, therefore, one cannot separate thought from matter without committing a grave error.

"(c) Contrary to idealism, which denies the possibility of knowing the world and its laws... Marxist philosophical materialism holds that the world and its laws are fully knowable, that our knowledge of the laws of nature, tested by experiment and practice, is authentic knowledge having the validity of objective truth, and that there are no things in the world which are unknowable, but only things which are still not known, but which will be disclosed and made

known by the efforts of science and practice."[1]

Materialism and Idealism in Practice

As was pointed out above, the opposition of materialism and idealism — which has now been stated in its most general terms — is not an opposition between abstract theories of the nature of the world, but is an opposition between different ways of understanding and interpreting every question. That is why it is of such profound importance.

Let us consider some of the very practical ways in which the opposition of materialism and idealism is manifested.

Idealists tell us, for example, not to place "too much" reliance on science. They tell us that the most important truths are beyond the reach of science. Hence they encourage us not to believe things on the basis of evidence, experience, practice, but to take them on trust from those who pretend to know best and to have some "higher" source of information.

In this way idealism is a very good friend and standby of every form of reactionary propaganda. It is the philosophy of the capitalist press and the radio. It favours superstitions of all sorts, prevents us from thinking for ourselves and taking a scientific approach to moral and social problems.

Again, idealists tell us that what is most important for us all is the inner life of the soul. They tell us that we shall never solve our human problems except by some inner regeneration. This is a favourite theme in the speeches of well-fed persons. But many workers fall for it too — in factories,

[1] Stalin, *Dialectical and Historical Materialism.*

for example, where a "Moral Rearmament" group is active. They tell you not to fight for better conditions, but to improve your soul. They do not tell you that the best way to improve yourself both materially and morally is to join in the fight for peace and socialism.

Again, an idealist approach is common amongst many socialists. Many sincere socialists, for example, think that what is essentially wrong with capitalism is that goods are unfairly distributed, and that if only we could get everyone, including the capitalists, to accept a new conception of fairness and justice, then we could do away with the evils of capitalism. Socialism to them is nothing but the realization of an abstract idea of justice.

The idealism of this belief lies in its assumption that it is simply the *ideas* which we hold that determine the way we live and the way society is organized. Those who think in this way forget to look for the *material* causes. For what in fact determines the way goods are distributed in capitalist society — the wealth enjoyed by one part of society, while the other and greater part lives in poverty — is not the ideas which men hold about the distribution of wealth, but the material fact that the mode of production rests on the exploitation of the worker by the capitalist. So long as this mode of production remains in existence, so long will extremes of wealth and poverty remain, and so long will socialist ideas of justice be opposed by capitalist ideas of justice. The task of socialists, therefore, is to organize and lead the struggle of the working class against the capitalist class to the point where the working class takes power from the capitalist class.

If we do not understand this, then we cannot find the way to fight effectively for socialism. We shall find that our socialist ideals are constantly disappointed and betrayed. Such, indeed, has been the experience of British socialism.

It can be seen from these examples how idealism serves as a weapon of reaction; and how when socialists embrace idealism they are being influenced by the ideology of the capitalists. We can no more take over and use capitalist ideas for the purposes of socialist theory than we can take over and use the capitalist state machine, with all its institutions and officials, for the purposes of building socialism.

Right through history, indeed, idealism has been a weapon of reaction. Whatever fine systems of philosophy have been invented, idealism has been used as a means of justifying the rule of an exploiting class and deceiving the exploited.

This is not to say that truths have not been expressed in an idealist guise. Of course they have. For idealism has very deep roots in our ways of thinking, and so men often clothe their thoughts and aspirations in idealist dress. But the idealist form is always an impediment, a hindrance in the expression of truth — a source of confusion and error.

Again, progressive movements in the past have adopted and fought under an idealist theory. But this has shown only that they contained in themselves the seeds of future reaction (inasmuch as they represented the striving of a new exploiting class to come to power) or that they were themselves influenced by ideas of reaction; or it has been a mark of their weakness and immaturity.

For example, the great revolutionary movement of the

English bourgeoisie in the seventeenth century fought under idealist, religious slogans. But the same appeal to God which justified Cromwell in the execution of the King justified him also in stamping out the Levellers.

Early democrats and socialists had many idealist notions. But in their case this demonstrated the *immaturity* and *weakness* of the movement. The idealist illusions had to be overcome if the revolutionary working-class movement was to arise and triumph. As the movement grew strong, the continuance within it of idealist notions represented an alien, reactionary influence.

We can truly say that idealism is essentially a conservative force — an ideology helping the defence of things as they are, and the preservation of illusions in men's minds about their true condition.

On the other hand, every real social advance — every increase in the productive forces, every advance of science — generates materialism and is helped along by materialist ideas. And the whole history of human thought has been the history of the fight of materialism against idealism, of the overcoming of idealist illusions and fantasies.

The Fight for Materialism

Marxists, as the organized vanguard of the working class fighting to end all exploitation of man by man and to establish communism, have no use for idealism in any form.

Here, for example, are some of the ways in which Lenin expressed himself on this question.

"The genius of Marx and Engels consisted in the very fact that in the course of a long period, nearly half a century,

they developed materialism, that they further advanced one fundamental trend in philosophy...

"Take the various philosophical utterances by Marx... and you will find an invariable basic motif, *viz.* insistence upon materialism and contemptuous derision of all obscurantism, of all confusion and all deviations towards idealism...

"Marx and Engels were partisans in philosophy from start to finish; they were able to detect the deviations from materialism and concessions to idealism... in each and every 'new' tendency...

"The realists etc., including the positivists, are all a wretched mush; they are a contemptible middle party in philosophy, who confuse the materialist and idealist trends on every question. The attempt to escape these two basic trends in philosophy is nothing but conciliatory quackery."[1]

On every issue we are partisans of materialism against idealism. This is because we know that it is in the light of materialist theory, which studies things as they are, without idealist fantasies about them, that we can understand the forces in nature and society so as to be able to transform society and to master the forces of nature.

And because of this, too, materialism teaches us to have confidence in ourselves, in the working class — in people. It teaches us that there are no mysteries beyond our understanding, that we need not accept that which is as being the will of God, that we should contemptuously reject the

[1] Lenin, Selected Works, Vol. 11, "Materialism and Empirio-Criticism," Chapter VI, Section 4.

"authoritative" teachings of those who set up to be our masters, and that we can ourselves understand nature and society so as to be able to change them.

We hate idealism, because under cover of high-sounding talk it preaches the subjection of man to man and belittles the power of humanity.

It was the materialist confidence in humanity which was expressed by Maxim Gorky when he wrote:

"For me, there are no ideas beyond man; for me, man and only man is the miracle worker and the future master of all forces of nature. The most beautiful things in this our world are the things made by labour, made by skilled human hands, and all our ideas are born out of the process of labour.

"And if it is thought necessary to speak of sacred things, then the one sacred thing is the dissatisfaction of man with himself and his striving to be better than he is; sacred is his hatred of all the trivial rubbish which he himself has created; sacred is his desire to do away with greed, envy, crime, disease, war and all enmity between men on earth; and sacred is his labour."[1]

[1] Maxim Gorky, *Literature and Life*, "How I Learned to Write," London 1946.

3. Mechanistic Materialism

The type of materialism produced in the past by the revolutionary bourgeoisie was mechanistic materialism. This took over the ancient materialist conception that the world consisted of unchanging material particles (atoms), whose interactions produced all the phenomena of nature, and further strove to understand the workings of nature on the model of the workings of a machine.

It was in its time a progressive and revolutionary doctrine. But it has three grave weaknesses. (1) It requires the conception of a Supreme Being who started the world up; (2) it seeks to reduce all processes to the same cycle of mechanistic interactions and so cannot account for development, for the emergence of new qualities, new types of processes in *nature; (3) it cannot account for social development,* can *give no account of human social activity and leads to* an *abstract conception of human nature.*

The Changing World and How to Understand It

Before Marx, materialism was predominantly *mechanistic.*

We often hear people complain that the materialists seek to reduce everything in the world, including life and mind, to a system of soulless mechanism, to a mere mechanical interaction of bodies. This refers to mechanistic materialism. Marxist materialism is, however, not mechanistic but dialectical. To understand what this means we need first to understand something about mechanistic materialism itself.

We can approach this problem by asking how materialists have sought to understand the various processes of

change which are observed everywhere in the world.

The world is full of change. Night follows day and day night; the seasons succeed each other; people are born, grow old and die. Every philosophy recognizes that change is an omnipresent fact. The question is: how are we to understand the change which we observe everywhere?

Change may be understood, in the first place, in an idealist way or in a materialist way.

Idealism traces back all change to some idea or intention — if not human, then divine. Thus for idealism, changes in the material world are, in the last analysis, initiated and brought about by something outside matter, not material, not subject to the laws of the material world.

But materialism traces back all change to material causes. In other words, it seeks to explain what happens in the material world from the material world itself.

But while the occurrence of change has been recognized by everyone, since none can ignore it, philosophers have nevertheless sought to find something which does not change — something permanent, something changeless, behind or within the change.

This is generally an essential part of the ideology of an exploiting class. They are afraid of change, because they are afraid that they, too, may be swept away. So they always seek for something fixed and stable, not subject to change. They try to hitch themselves on to this, as it were.

The earlier materialists, too, sought for this. Behind all the changing appearances they looked for something which never changes. But while idealists looked for the eternal and changeless in the realm of spirit, these materialists looked for

it in the material world itself. And they found it in the ultimate material particle — the eternal and indestructible atom. ("Atom" is a Greek word meaning "unbreakable.")

For such materialists, then, all *changes* were produced by the movement and interaction of *unchanging* atoms.

This is a very ancient theory, put forward over two thousand years ago in Greece, and earlier still in India.

In its day it was a very progressive theory, a great weapon against idealism and superstition. The Roman poet Lucretius, for example, explained in his philosophical poem *On the Nature of Things* that the purpose of the atomistic theory of the Greek philosopher Epicurus was to demonstrate "what are the elements out of which everything is formed, and how everything comes to pass without the intervention of the gods."

Thus there was born a materialism which saw the world as consisting of hard, impenetrable material particles, and which understood all change as arising from nothing but the motion and interaction of such particles.

This theory was revived in modern times. In the sixteenth and seventeenth centuries philosophers and scientists turned to it in their fight against feudal, Catholic philosophy. But this modern materialism proved to be much richer in content than the ancient. For it tried to work out what were the laws of interaction of material particles, and so to present a picture of how all phenomena, from merely physical changes to the life of man, resulted from the motion and interaction of the separate parts of matter. In this way, by the eighteenth century, there had appeared the characteristic modern theories of mechanistic materialism.

A Bourgeois Philosophy

Mechanistic materialism was in essence an ideology, a mode of theorizing, of the rising bourgeoisie. In order to understand it we must understand, first of all, that it arose and developed in opposition to feudal ideology — that its critical edge was directed against feudal ideas, that it was in fact the most radical of all bourgeois forms of opposition against the feudal outlook.

In the period of the rise of the bourgeoisie, the feudal social relations were shattered, and so were the feudal ideas, embodied in the Catholic philosophy, in which those social relations were enshrined.

The feudal system, whose economic basis lay in the exploitation of the serfs by the feudal proprietors, involved complex social relationships of dependence, subordination and allegiance. All this was reflected, not only in social and political philosophy, but also in the philosophy of nature.

It was typical of the natural philosophy of the feudal period that everything in nature was explained in terms of its proper place in the system of the universe, in terms of its supposed position of dependence and subordination in that system, and of the end or purpose which it existed to serve.

The bourgeois philosophers and scientists destroyed these feudal ideas about nature. They regarded nature as a system of bodies in interaction, and, rejecting all the feudal dogmas, they called for the investigation of nature in order to discover how nature really worked.

The investigation of nature advanced hand in hand with the geographical discoveries, the development of trade and

transport, the improvement of machinery and manufactures. The greatest strides were made in the mechanical sciences, closely connected as they were with the needs of technology. So it came about that materialist theory was enriched as the result of the scientific investigation of nature, and in particular by the mechanical sciences.

This determined at once the strength and the weakness, the achievement and the limitation, of the materialist theory.

What pushed that theory forward was, so Engels writes, "the powerful and ever more rapidly onrushing progress of science and industry." But it remained "predominantly mechanical," because only the mechanical sciences had attained any high degree of development. Its "specific, but at that time inevitable limitation" was its "exclusive application of the standards of mechanics."[1]

The mechanistic way of understanding nature did not arise, however, simply from the fact that at that time it was only the mechanical sciences which had made any great progress. It was deeply rooted in the class outlook of the most progressive bourgeois philosophers, and this led to their turning exclusively to the mechanical sciences for their inspiration.

Just as the bourgeoisie, overthrowing feudal society, stood for individual liberty, equality and the development of a free market, so the most progressive philosophers of the bourgeoisie — the materialists — overthrowing the feudal ideas, proclaimed that the world consisted of separate

[1] Engels, *Ludwig Feuerbach*, Chapter II.

material particles interacting with one another in accordance with the laws of mechanics.

This theory of nature reflected bourgeois social relations no less than the theories it replaced had reflected feudal social relations. But just as the new bourgeois social relations broke the feudal fetters and enabled a great new development of the forces of production to begin, so the corresponding bourgeois theory of nature broke down the barriers which feudal ideas had placed in the way of scientific research and enabled a great new development of scientific research to begin.

The philosophical outlook seemed to find its confirmation in science, and science provided materials for the development and working out in detail of the philosophical outlook.

The World and the Machine

The world — so thought the mechanistic materialists — consists of nothing but particles of matter in interaction. Each particle has an existence separate and distinct from every other; in their totality they form the world; the totality of their interactions forms the totality of everything that happens in the world; and these interactions are of the mechanical type, that is to say, they consist simply of the external influence of one particle upon another.

Such a theory is equivalent to regarding the whole world as nothing but a complex piece of machinery, a mechanism.

From this standpoint, the question always posed about any part of nature is the question we ask about a machine: what is its mechanism, how does it work?

This was exemplified in Newton's account of the solar system. Newton adopted the same general view as the Greek materialist, Epicurus, inasmuch as he thought that the material world consisted of particles moving about in empty space. But faced with any particular natural phenomenon, such as the movements of the sun and planets, Epicurus was not in the least concerned to give any exact account of it. With regard to the apparent movement of the sun across the heavens from east to west, for example, Epicurus said that the important thing was to understand that the sun was not a god but was simply a collection of atoms: no account of the actual machinery of its motions was necessary. Perhaps, he said, the sun goes round and round the earth; but perhaps it disintegrates and its atoms separate every night, so that it is "a new sun" which we see the next morning: to him such questions were simply unimportant. Newton, on the other hand, was concerned to show exactly how the solar system worked, to demonstrate the mechanics of it, in terms of gravity and mechanical forces.

But just as Epicurus was not interested in how the solar system worked, so Newton was not interested in how it originated and developed. He took it for granted as a stable piece of machinery — created, presumably, by God. Not how it originated, not how it developed, but how it worked, was the question which he dealt with.

The same mechanistic approach was manifested in Harvey's discovery of the circulation of the blood. The essence of his discovery was that he demonstrated the mechanism of circulation, regarding the heart as a pump, which pumps the blood out along the arteries so that it flows back through the

veins, the whole system being regulated by a series of valves.

To understand the mechanistic outlook better, let us ask: what is a mechanism? what is characteristic of a mechanism?

(*a*) A mechanism consists of permanent parts, which fit together.

(*b*) It requires a motive force to set it going.

(*c*) Once set going, the parts interact and results are produced according to laws which can be exactly stated.

Consider, for example, such a mechanism as a watch. (*a*) It consists of a number of different parts — cogs, levers and so on — fitted neatly together. (*b*) It has to be wound up. (c) Then, as the spring uncoils, the parts interact according to laws exactly known to watchmakers, resulting in the regular movements of the hands on the dial.

Further, to know how a mechanism, such as a watch, works, you must take it to bits, find out what its parts are, how they fit together and how, by their interactions, once the mechanism is set in motion by the application of the required motive force, they produce the total motion characteristic of the mechanism in working order.

This is just how the mechanistic materialists regarded nature. They sought to take nature to bits, to find its ultimate component parts, how they fitted together and how their interactions produced all the changes we perceive, all the phenomena of the world. And moreover, finding out how the mechanism worked, they sought to find out how to repair it, how to improve it, how to change it and to make it produce new results corresponding lo the requirements of man.

The Strength and Achievement of Mechanistic Materialism

Mechanistic materialism was an important milestone in our understanding of nature. And it was a great progressive step of bourgeois thinkers, a blow against idealism.

The mechanists were thorough-going in their materialism. For they waged a progressive fight against idealism and clericalism by trying to extend to the realm of mind and society the same mechanistic conceptions which were used in the scientific investigation of nature. They sought to include man and all his spiritual activities in the mechanistic system of the natural world.

The most radical mechanists regarded not merely physical processes, and not merely plant and animal life, but man himself as a machine. Already in the seventeenth century the great French philosopher Descartes had said that all animals were complicated machines — automata: but man was different, since he had a soul. But in the eighteenth century a follower of Descartes, the physician LaMettrie, wrote a book with the provocative title *Man a Machine.* Men, too, were machines, he said, though very complicated ones.

This doctrine was looked upon as exceptionally shocking, and as a terrible insult to human nature, not to mention God. Yet it was in its time a progressive view of man. The view that men are machines was an advance in the understanding of human nature as compared with the view that they are wretched pieces of clay inhabited by immortal souls. And it was, comparatively speaking, a more humane view.

For example, the great English materialist and utopian socialist Robert Owen told the pious industrialists of his

time:

"Experience has shown you the difference of the results between mechanism which is neat, clean, well-arranged and always in a high state of repair, and that which is allowed to be dirty, in disorder, and which therefore becomes much out of repair... If, then, due care as to the state of your inanimate machines can produce such beneficial results, what may not be expected if you devote equal attention to your *vital* machines, which are far more wonderfully constructed?"[1]

This humanitarianism was, however, at the best bourgeois humanitarianism. Like all mechanistic materialism, it was rooted in the class outlook of the bourgeoisie. The view that man is a machine is rooted in the view that in production man is a mere appendage of the machine. And if on the one hand this implies that the human machine ought to be well tended and kept in good condition, on the other hand it equally implies that no more should be expended for this purpose than is strictly necessary to keep the human machine in bare working order.

The Weakness and Limitations of Mechanistic Materialism

Mechanistic materialism had grave weaknesses.

(1) It could not sustain the materialist standpoint consistently and all the way.

For if the world is like a machine, who made it, who started it up? There was necessary, in any system of mechanistic materialism, a "Supreme Being," outside the material world — even if he no longer continuously interfered in the

[1] Robert Owen, *New View of Society.*

world and kept things moving, but did no more than start things up and then watch what happened.

Such a "Supreme Being" was postulated by nearly all the mechanistic materialists; for example, by Voltaire and Tom Paine. But this opens the door to idealism.

(2) Mechanistic materialism sees change everywhere. Yet because it always tries to *reduce* all phenomena to the same system of mechanical interactions, it sees this change as nothing but the eternal *repetition* of the same kinds of mechanical processes, an eternal cycle of the same changes.

This limitation is inseparable from the view of the world as a machine. For just as a machine has to be started up, so it can never do anything except what it was made to do. It cannot change itself or produce anything radically new. Mechanistic theory, therefore, always breaks down when it is a question of accounting for the emergence of *new quality.* It sees change everywhere — but nothing *new,* no *development.*

The various processes of nature — chemical processes and the processes of living matter, for example — cannot in fact be all reduced to one and the same kind of mechanical interaction of material particles.

Chemical interactions differ from mechanical interactions inasmuch as the changes which take place as a result of chemical Interaction involve a change of quality. For example, if we consider the mechanical interaction of two particles which collide, then their qualitative characteristics are irrelevant and the result is expressed as a change in the quantity and direction of motion of each. But if two chemical substances come together and combine chemically, then

there results a new substance qualitatively different from either. Similarly, from the point of view of mechanics heat is nothing but an increase in the quantity of motion of the particles of matter. But in chemistry, the application of heat leads to qualitative changes.

Nor do the processes of nature consist in the repetition of the same cycle of mechanical interactions, but in nature there is continual development and evolution, producing ever new forms of the existence or, what is the same thing, motion of matter. Hence the more widely and consistently the mechanistic categories are applied in the interpretation of nature, the more is their essential limitation exposed.

(3) Still less can mechanistic materialism explain *social* development.

Mechanistic materialism expresses the radical bourgeois conception of society as consisting of social atoms, interacting together. The real economic and social causes of the development of society cannot be discovered from this point of view. And so great social changes seem to spring from quite accidental causes. Human activity itself appears to be either the mechanical result of external causes, or else it is treated — and here mechanistic materialism collapses into idealism — as purely spontaneous and uncaused.

In a word, mechanistic materialism cannot give an account of men's social activity.

Mechanistic Materialism and Utopian Socialism

The mechanistic view treated men quite abstractly, each man being regarded as a social atom endowed by nature with certain inherent properties, attributes and rights.

This was expressed in the bourgeois conception of "the rights of man," and in the bourgeois revolutionary slogan: "All men are equal."

But the conception of human rights cannot be deduced from the abstract nature of man, but is determined by the stage of society in which men are living. Nor are men what they are "by nature," but they become what they are, and change, as a result of their social activity. Nor are all men "by nature" equal. In opposition to the bourgeois conception of abstract equality, which amounted to mere formal equality of rights as citizens, equality before the law, Marx and Engels declared:

"The real content of the proletarian demand for equality is the demand for the abolition of classes. Any demand for equality which goes beyond that of necessity passes into absurdity."[1]

Adopting their abstract, mechanistic view of men as social atoms, the progressive mechanists tried to work out, in an abstract way, what form of society would be best for mankind — what would best suit abstract human nature, as they conceived of it.

This way of thinking was taken over by the socialist thinkers who immediately preceded Marx, the utopian socialists. The utopian socialists were mechanistic materialists. They put forward socialism as an ideal society. They did not see it as necessitated by the development of the contradictions of capitalism — it could have been put forward and

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[1] Frederick Engels, *Anti-Dühring*, Part I, Chapter X, New York 1939.

realized at any time, if only men had had the wit to do so. They did not see it as having to be won by working-class struggle against capitalism — it would be realized when everyone was convinced that it was just and best adapted to the requirements of human nature. (For this reason Robert Owen appealed to both the Archbishop of Canterbury and Queen Victoria to support his socialist program.)

Again, the mechanistic materialists — and this applied above all to the utopian socialists — thought that what a man was, his character and his activities, was determined by his environment and education. Therefore they proclaimed that to make men better, happier and more rational it was simply necessary to place them in better conditions and to give them a better education.

But to this Marx replied:

"The materialist doctrine that men are products of circumstances and upbringing and that, therefore, changed men are produced by changed circumstances and changed upbringing, forgets that circumstances are changed precisely by men and that the educator must himself be educated."[1]

If men are simply the products of circumstances, then they are at the mercy of circumstances. But on the contrary, men can themselves change their circumstances. And men themselves are changed, not as a mechanical result of changed circumstances, but in the course of and as a result of their own activity in changing their circumstances.

So what are the real material social causes at work in

[1] Engels, *Ludwig Feuerbach*, Appendices, Marx, "Theses on Feuerbach," III.

human society, which give rise to new activities, new ideas and therefore to changed circumstances and changed men?

Mechanistic materialism could not answer this question. It could not explain the laws of social development nor show how to change society.

Therefore while it was a progressive and revolutionary doctrine in its time, it could not serve to guide the struggle of the working class in striving to change society.

4. From Mechanistic to Dialectical Materialism

Mechanistic materialism makes certain dogmatic assumptions: (1) That the world consists of permanent and stable things or particles, with definite, fixed properties; (2) that the particles of matter are by nature inert and no change ever happens except by the action of some external cause; (3) that all motion, all change can be reduced to the mechanical interaction of the separate particles of matter; (4) that each particle has its own fixed nature independent of everything else, and that the relationships between separate things are merely external relationships.

Overcoming and passing beyond the dogmatic standpoint of mechanism, dialectical materialism holds that the world is not a complex of things but of processes, that matter is inseparable from motion, that the motion of matter comprehends an infinite diversity of forms which arise one from another and pass into one another, and that things exist not as separate individual units but in essential relation and interconnection.

Things and Processes

In order to find how the limitations of the mechanist approach can be overcome we may consider first of all certain extremely dogmatic assumptions which are made by mechanistic materialism. These mechanistic assumptions are none of them justified. And by bringing them to the light of day and pointing out what is wrong with them, we can see how to advance beyond mechanistic materialism.

(1) Mechanism sees all change as having at its basis permanent and stable things with definite, fixed properties.

Thus for the mechanists the world consists of indivisible, indestructible material particles, which in their

interaction manifest such properties as position, mass, velocity.

According to mechanism, if you could state the position, mass and velocity of every particle at a given instant of time, then you would have said everything that could be said about the world at that time, and could, by applying the laws of mechanics, predict everything that was going to happen afterwards.

This is the first dogmatic assumption of mechanism. But we need to reject it. For the world does not consist of *things* but of *processes,* in which things come into being and pass away.

"The world is not to be comprehended as a complex of ready-made things," wrote Engels, "but as a complex of processes, in which things apparently stable, no less than their mind-images in our heads, the concepts, go through an uninterrupted change of coming into being and passing away."[1]

This, indeed, is what science in its latest developments teaches us. Thus the atom, once thought to be eternal and indivisible, has been dissolved into electrons, protons and neutrons; and these themselves are not "fundamental particles" in any absolute sense, *i.e.* they are not eternal and indestructible, any more than the atom; but science more and more shows that they, too, come into being, pass away and go through many transformations.

What is fundamental is not the "thing," the "particle," but the unending *processes* of nature, in which *things* go

[1] Engels, *Ludwig Feuerbach*, Chapter IV.

through "an uninterrupted change of coming into being and passing away." And nature's process is, moreover, infinite: there will always be fresh aspects to be revealed, and it cannot be reduced to any *ultimate* constituents. "The electron is as inexhaustible as the atom, nature is infinite," wrote Lenin.[1]

Just so in considering society, we cannot understand a given society simply in terms of some set of institutions in and through which individual men and women are organized, but we must study the social processes which are going on, in the course of which both institutions and people are transformed.

Matter and Motion

(2) The second dogmatic assumption of mechanism is the assumption that no change can ever happen except by the action of some external cause.

Just as no part of a machine moves unless another part acts on it and makes it move, so mechanism sees matter as being inert — without motion, or rather without self-motion. For mechanism, nothing ever moves unless something else pushes or pulls it, it never changes unless something else interferes with it.

No wonder that, regarding matter in this way, the mechanists had to believe in a Supreme Being to give the "initial impulse." But we need to reject this lifeless, dead theory about matter. This theory separates matter and motion: it

[1] Lenin, Selected Works, Vol. 11, "Materialism and Empirio-Criticism," Chapter V, Section 2.

thinks of matter as just a dead mass, so that motion always has to be impressed on matter from outside. But, on the contrary, you cannot separate matter and motion. Motion, said Engels, is the mode of existence of matter.

"Motion is the mode of existence of matter. Never anywhere has there been matter without motion, nor can there be. Motion in cosmic space, mechanical motion of smaller masses on the various celestial bodies, the motion of molecules as heat or as electrical or magnetic currents, chemical combination or disintegration, organic life — at each given moment each individual atom of matter in the world is in one or other of these forms of motion, or in several forms of them at once. All rest, all equilibrium is only relative, and only has meaning in relation to one or other definite form of motion. A body, for example, may be on the ground in mechanical equilibrium, may be mechanically at rest; but this in no way prevents it from participating in the motion of the earth and in that of the whole solar system, just as little as it prevents its most minute parts from carrying out the oscillations determined by its temperature, or its atoms from passing through a chemical process. Matter without motion is just as unthinkable as motion without matter."[1]

Far from being dead, lifeless, inert, it is the very nature of matter to be in process of continual change, of motion. Once we realize this, then there is an end of appeal to the "initial impulse." Motion, like matter, never had a beginning.

The conception of the inseparability of matter and

[1] Engels, *Anti-Dühring,* Part I, Chapter VI.

motion, the understanding that "motion is the mode of existence of matter," provides the way to answering a number of perplexing questions which usually haunt people's minds when they think about materialism and which lead them to desert materialism and to run to the priests for an explanation of the "ultimate" truth about the universe.

Was the world created by a Supreme Being? What was the origin of matter? What was the origin of motion? What was the very beginning of everything? What was the first cause? These are the sort of questions which puzzle people.

It is possible to answer these questions.

No, the world was not created by a Supreme Being. Any particular organization of matter, any particular process of matter in motion, has an origin and a beginning — it originated out of some previous organization of matter, out of some previous process of matter in motion. But matter in motion had no origin, no beginning.

Science teaches us the inseparability of matter and motion. However static some things may seem to be, there is in them continual motion. The atom, for instance, maintains itself as the same only by means of a continual movement of its parts.

So in studying the causes of change, we should not merely seek for external causes of change, but should above all seek for the source of the change within the process itself, in its own self-movement, in the inner impulses to development contained within things themselves.

Thus in seeking the causes of social development and its laws, we should not see social changes as being brought about by the actions of great men, who impressed their

superior ideas and will on the inert mass of society — nor as being brought about by accidents and external factors — but as being brought about by the development of the internal forces of society itself; and that means, by the development of the social forces of production.

Thus unlike the utopians, we see socialism as the result, not of the dreams of reformers, but of the development of capitalist society itself — which contains within itself causes which must inevitably bring it to an end and lead to the socialist revolution.

The Forms of Motion of Matter

(3) The third dogmatic assumption of mechanism is the assumption that the mechanical motion of particles, *i.e.* the simple change of place of particles as the result of the action on them of external forces, is the ultimate, basic form of motion of matter; and that all changes, all happenings whatsoever can be reduced to and explained by such mechanical motion of particles.

Thus all the motion of matter is reduced to simple mechanical motion. All the changing qualities which we recognize in matter are nothing but the appearances of the basic mechanical motion of matter. However varied the appearances may be, whatever new and higher forms of development may appear to arise, they are all to be reduced to one and the same thing — the eternal repetition of the mechanical interaction of the separate parts of matter.

It is difficult to find any justification for such an assumption. In the material world there are many different types of process, which all constitute different forms of the

motion of matter. But they can by no means be all reduced to one and the same form of (mechanical) motion.

"Motion in the most general sense," wrote Engels, "conceived as the mode of existence, the inherent attribute, of matter, comprehends all changes and processes occurring in the universe, from mere change of place right to thinking. The investigation of the nature of motion had as a matter of course to start from the lowest, simplest forms of this motion and to learn to grasp these before it could achieve anything in the way of explanation of the higher and more complicated forms."[1]

The simplest form of motion is the simple change of place of bodies, the laws of which are studied by mechanics. But that does not mean that all motion can be reduced to this simplest form of motion. It rather means that we need to study how, from the simplest form of motion, all the higher forms of motion arise and develop — "from mere change of place right to thinking."

One form of motion is transformed into another and arises from another. The higher, more complex form of motion cannot exist without the lower and simpler form: but that is not to say that it can be reduced to that simpler form. It is inseparable from the simpler form, but its nature is not exhausted thereby. For example, the thinking which goes on in our heads is inseparable from the chemical, electrical etc. motion which goes on in the grey matter of the brain; but it cannot be reduced to that motion, its nature is not

[1] Frederick Engels, *Dialectics of Nature*, Chapter III, New York 1940.

exhausted thereby.

The *materialist* standpoint, however, which rejects the mechanistic idea that all forms of motion of matter can be reduced to mechanical motion, must not be confused with the *idealist* notion that the higher forms of motion cannot be explained as arising from the lower forms. For example, idealists assert that life, as a form of motion of matter, cannot possibly be derived from any processes characteristic of non-living matter. For them, life can only arise through the introduction into a material system of a mysterious something from outside — a "vital force." But to say that a higher form of motion cannot be reduced to a lower form is not to say that it cannot be derived from the lower form in the course of the latter's development. Thus materialists will always affirm that life, for example, appears at a certain stage in the development of more complex forms of non-living matter, and arises as a result of that development, not as a result of the introduction into non-living matter of a mysterious "vital force." The task of science in this sphere remains to demonstrate experimentally how the transition from non-living to living matter takes place.

Thus the mechanistic program of reducing all the motion of matter to simple, mechanical motion must be rejected. We need rather to study all the infinitely various forms of motion of matter, in their transformations one into another, and as they arise one from another, the complex from the simple, the higher from the lower.

In the case of society, no one has yet tried to show how social changes can be explained by the mechanical interactions of the atoms composing the bodies of the various

members of society — though to do so would be the logical culmination of the mechanistic program. But the next best thing is attempted by the mechanistic theory known as "economic determinism." According to this theory, the whole motion of society is to be explained by the economic changes taking place in society, all the determinants of social change have been exhausted when the economic process has been described. This is an example of the mechanistic program of reducing a complex motion to a simple form — the process of social change, including all the political, cultural and ideological developments, to a simple economic process. But the task of explaining social development cannot be fulfilled by trying to reduce the whole development to an economic process. The task is rather to show how, on the basis of the economic process, all the various forms of social activity arise and play their part in the complex movement of society.

Things and Their Interconnection

(4) The last dogmatic assumption of mechanism to be mentioned is that each of the things or particles, whose interactions are said to make up the totality of events in the universe, has its own fixed nature quite independent of everything else. In other words, each thing can be considered as existing in separation from other things, as an independent unit.

Proceeding on this assumption it follows that all relations between things are merely external relations. That is to say, things enter into various relationships one with another, but these relationships are accidental and make no

difference to the nature of the things related.

And regarding each thing as a separate unit entering into external relations with other things, it further follows that mechanism regards the whole as no more than the sum of its separate parts. According to this view, the properties and laws of development of the whole are uniquely determined by the properties of all its parts.

Not one of these assumptions is correct. Nothing exists or can exist in splendid isolation, separate from its conditions of existence, independent of its relationships with other things. Things come into being, exist and cease to exist, not each independent of all other things, but each in its relationship with other things. The very nature of a thing is modified and transformed by its relationships with other things. When things enter into such relationships that they become parts of a whole, the whole cannot be regarded as nothing more than the sum total of the parts. True, the whole is nothing apart from and independent of its parts. But the mutual relations which the parts enter into in constituting the whole modify their own properties, so that while it may be said that the whole is determined by the parts it may equally be said that the parts are determined by the whole.

Once again, the development of science itself shows the inadmissibility of the old mechanistic assumptions. These assumptions have force only in the very limited sphere of the study of the mechanical interactions of discrete particles. In physics they were already shattered with the development of the study of the electro-magnetic field. Still less are they admissible in biology, in the study of living matter, and still

less in the study of men and society.

The Correction of Mechanistic Materialism

When we bring into the open and reject these assumptions of mechanistic materialism, then we begin to see the need for a materialist doctrine of a different, of a new type — a materialism which overcomes the weaknesses and narrow, dogmatic assumptions of mechanism.

This is dialectical materialism.

Dialectical materialism understands the world, not as a complex of ready-made things, but as a complex of processes, in which all things go through an uninterrupted change of coming into being and passing away.

Dialectical materialism considers that matter is always in motion, that motion is the mode of existence of matter, so that there can no more be matter without motion than motion without matter. Motion does not have to be impressed upon matter by some outside force, but above all it is necessary to look for the inner impulses of development, the self-motion, inherent in all processes.

Dialectical materialism understands the motion of matter as comprehending all changes and processes in the universe, from mere change of place right to thinking. It recognizes, therefore, the infinite diversity of the forms of motion of matter, the transformation of one form into another, the development of the forms of motion of matter from the simple to the complex, from the lower to the higher.

Dialectical materialism considers that, in the manifold processes taking place in the universe, things come into being, change and pass out of being, not as separate individual

units, but in essential relation and interconnection, so that they cannot be understood each separately and by itself but only in their relation and interconnection.

In dialectical materialism, therefore, there is established a materialist conception far richer in content and more comprehensive than the former mechanistic materialism.

5. The Dialectical Conception of Development

Whereas the older philosophies considered that the universe always remained much the same, a perpetual cycle of the same processes, science has demonstrated the fact of evolution. But while recognizing the fact of evolutionary development, bourgeois thinkers have tried to understand and explain it in fantastic, idealist terms. And they have conceived of development as being always a smooth, continuous process, not recognizing the occurrence of abrupt breaks in continuity, the leap from one stage to another.

Following up the ideas of Hegel by taking up the revolutionary side of his philosophy while freeing it of its idealist trammels, Marx and Engels established the dialectical materialist conception of development. The key to understanding development in nature and society and the leaps and breaks in continuity which characterize all real development — lies in the recognition of the inner contradictions and opposite conflicting tendencies which are in operation in all processes.

This discovery by Marx and Engels was a revolution in philosophy and made of it a revolutionary weapon of the working people, a method for understanding the world so as to change it.

The Idea of Evolution

We have seen that the corrections of the mechanistic standpoint made by dialectical materialism are fully justified by and have a basis in the advance of science. Indeed, the advance of science itself has shattered the whole conception of the universe held by the older, mechanistic materialists.

According to that conception, the universe always remained much the same. It was a huge machine which always

did the same things, kept grinding out the same products, went on and on in a perpetual cycle of the same processes.

Thus it used to be thought that the stars and the solar system always remained the same — and that the earth, with its continents and oceans and the plants and animals inhabiting them, likewise always remained the same.

But this conception has given way to the conception of evolution, which has invaded all spheres of investigation without exception. Nor was it scientific investigation alone which produced the idea of evolution. Science does not advance in isolation from society as a whole. The idea of evolution was generated out of the rise of industrial capitalism itself.

"The bourgeoisie cannot exist without constantly revolutionizing the instruments of production, and thereby the relations of production, and with them the whole relations of society. Conservation of the old modes of production in unaltered form was, on the contrary, the first condition of existence of all earlier industrial classes. Constant revolutionizing of production, uninterrupted disturbance of all social conditions, everlasting uncertainty and agitation, distinguish the bourgeois epoch from all earlier ones."[1]

The industrial capitalists saw themselves as the bearers of progress. And as they thought progress was the law of capitalism, so they saw it as the law of the whole universe.

So there was made possible a great advance in the scientific picture of the universe. We find developing a picture of the universe, not as static, as always the same, but as in

[1] Marx and Engels, *The Communist Manifesto*, Chapter I.

continual progressive development.

The stars did not always exist — they were formed out of masses of dispersed gas.

Once formed, the whole stellar system, with all the stars in it, goes through an evolutionary process, stage by stage.

Some stars, like our sun, acquire planets — a solar system. Thus the earth was born. As its surface cooled, so chemical compounds were formed, impossible in the high temperatures of the stars.

Thus matter began to manifest new properties, non-existent before — the properties of chemical combination.

Then organic compounds were formed out of the complex linking of carbon atoms. And from organic matter the first bodies arose which began to manifest the properties of life, of living matter. Still new properties of matter emerged — the properties of living matter.

Living organisms went through a long evolution, leading eventually to man. With man, human society was born. And still new processes, with new laws, arose — the laws of society, and the laws of thought.

What comes next?

Capitalist science can go no further. Here it ends, since capitalist science cannot contemplate the ending of capitalism. But socialist science shows that man himself is about to embark on a new phase of evolution — communist society, in which the whole social process will be brought under his own conscious, planned direction.

All this is the evolutionary history of the material universe.

Apart from the last point, it may be said this is all

common knowledge. Bourgeois thinkers know this as well as Marxists, though they often forget it. But Marxism does not only stress the fact that everything in the world goes through a process of development. What Marxism found out was how to understand and explain this development in a materialist way.

The discovery of Marxism was the discovery of the laws of materialist dialectics. And that is why Marxism alone is able to give a fully scientific account of development and to point out the future path.

This is the meaning of Marx's great discovery — how to understand change and development in a materialist way, and therefore how to become masters of the future.

Idealist Conceptions of Change and Development

How did bourgeois thinkers try to account for the universal change and development which they discovered?

Let us consider what some of them have had to say over a period of more than a century.

Hegel said that the whole process of development taking place in history was due to the Absolute Idea realizing itself in history. Herbert Spencer said that all development was a process of increasing "integration of matter," and he put this down to what he called an "Incomprehensible and Omnipresent Power." Henri Bergson said that everything was in process of evolution, due to the activity of "the Life Force." Fairly recently, a school of British philosophers has coined the phrase "emergent evolution." They pointed out that in the course of development new qualities of matter are continually emerging, one after the other. But as to why this

should happen, one of the leaders of this school, Professor Samuel Alexander, said that it was inexplicable and must be accepted "with natural piety," while another of its leaders, Professor C. Lloyd Morgan, said that it must be due to some immanent force at work in the world, which he identified with God.

Thus in every case some fantasy, something inexplicable and unpredictable, was conjured up to explain development. And so, when they thought about the future, all these bourgeois philosophers of evolution either thought, like Hegel, that development had now finished (Hegel taught that the Absolute Idea was fully realized in the Prussian State of which he was a distinguished employee), or else regarded the future as unfathomable.

Nowadays they begin to give up hope altogether and regard everything — past, present and future — as incomprehensible, the result of forces no one can ever understand or control.

It is the same story in the sciences. The cosmogonists, who study the evolution of the stars, appeal to a mysterious creation to start the process off. The biologists who study the evolution of organic life appeal to a series of unpredictable accidents (the random mutations of genes) as the basis for the whole process.

Such ideas are, however, unscientific. Why? Because they assert that the processes they are supposed to be investigating take place without any cause. True, the assertion is often made under a cloak of "scientific" objectivity and humility: it is not positively stated that no cause exists, but only that we have at present no clue as to what the cause, if any,

may be. But such reservations do not materially alter the nature of the theories in question. For the fact remains that to say that matter was created, to say that "mutations" occur spontaneously, is to say that something happens for no reason, without any discoverable cause. Such statements do not deserve to be called even provisional scientific hypotheses but are simply idealist inventions, fantasies. Science may not yet know why something happens, but to say that it happens for no reason is to abandon science.

A second defect in the evolutionary ideas of most bourgeois thinkers is that they regard the process of evolution as a smooth, continuous and unbroken process. They see the process of transition from one evolutionary stage to another as taking place through a series of gradations, without conflict and without any break in continuity.

But continuity is not the law of development. On the contrary, periods of smooth, continuous evolutionary development are interrupted by sudden and abrupt changes. The emergence of the new stage in development takes place, when the conditions for it have matured, by a break in continuity, by the leap from one state to another.

Hegel was the first to point this out.

With every period of transition, he observed:

"It is as in the case of the birth of a child; after a long period of nutrition in silence, the continuity of the gradual growth in size, of quantitative change, is suddenly cut short by the first breath drawn — there is a break in the process, a qualitative change — and the child is born."[1]

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[1] G.W.F. Hegel, *Phenomenology of Mind*, Preface.

But Marx alone followed up this profound observation of Hegel. As for the ensuing bourgeois thinkers, although the investigations of science, and common experience itself, clearly demonstrate that development cannot take place without discontinuity, without abrupt transitions and the leap from one state to another, they have nevertheless in their general theories tried to make unbroken continuity the law of evolution.

This prejudice in favour of a smooth line of evolution has gone hand in hand with the liberal belief that capitalist society will evolve smoothly — through orderly bourgeois progress broadening down "from precedent to precedent," as Tennyson once expressed it. To have thought differently about evolution in general would have implied that we would have to think differently about social evolution in particular.

The Dialectical Materialist Conception of Development

The problem of understanding and explaining development in a materialist way — that is, "in harmony with the facts conceived in their own and not in a fantastic connection" — is answered by dialectical materialism.

Dialectical materialism considers the universe, not as static, not as unchanging, but as in continual process of development. It considers this development, not as a smooth, continuous and unbroken process, but as a process in which phases of gradual evolutionary change are interrupted by breaks in continuity, by the sudden leap from one state to another. And it seeks for the explanation, the driving force, of this universal movement, not in inventions of idealist

fantasy, but within material processes themselves — in the inner contradictions, the opposite conflicting tendencies, which are in operation in every process of nature and society.

The main ideas of materialist dialectics, which are applied in dealing with the laws of development of the real material world, including society, will be the subject of the following chapters. But this is how Lenin summed them up:

The essential idea of materialist dialectics is:

"The recognition of the contradictory, mutually exclusive, opposite tendencies in all phenomena and processes of nature... This alone furnishes the key to the self-movement of everything in existence. It alone furnishes the key to the leaps, to the break in continuity, to the transformation into the opposite, to the destruction of the old and emergence of the new...

"In its proper meaning, dialectics is the study of the contradiction within the very essence of things.

"Development is the struggle of opposites."[1]

From Hegel to Marx

Where contradiction is at work, there is the force of development.

This profound conception was first put forward by Hegel. But he worked it out in an idealist way. According to Hegel, the whole process in the material world, in space and time, is nothing but the realization of the Absolute Idea, outside space and time. The Idea develops through a series

[1] V.I. Lenin, Philosophical Notebooks, Russian Edition.

of contradictions, and it is this ideal development which manifests itself in the material world. If things in space and time are forced to go through a series of transformations and to arise and pass away one after the other, that is because they are nothing but the embodiment of a self-contradictory phase of the Absolute Idea. For Hegel, the development of real things was due to the self-contradictoriness of their concepts: where the concept was self-contradictory, the thing which realized that concept could not be stable but must eventually negate itself and turn into something else. Thus instead of the concepts of things being regarded as the reflections of those things in our minds, the things were themselves regarded as nothing but the realizations of their concepts.

This is how Engels summed up the materialist criticism of Hegel.

"Hegel was not simply put aside. On the contrary, one started out from his revolutionary side... from the dialectical method. But in its Hegelian form this method was unusable.

"According to Hegel, dialectics is the self-development of the concept. The absolute concept does not only exist — where unknown — from eternity, it is also the actual living soul of the whole existing world...

"According to Hegel, therefore, the dialectical development apparent in nature and history, *i.e.* the causal interconnection of the progressive movement from the lower to the higher, which asserts itself through all zig-zag movements and temporary setbacks, is only a miserable copy of the self-movement of the concept going on from eternity, no one knows where, but at all events independently of any

thinking human brain.

"This ideological reversal had to be done away with. We comprehended the concepts in our heads once more materialistically — as images of real things instead of regarding the real things as images of this or that stage of development of the absolute concept.

"Thus dialectics reduced itself to the science of the general laws of motion — both of the external world and of human thought — two sets of laws which are identical in substance, but differ in their expression in so far as the human mind can apply them consciously, while in nature and also up to now for the most part in human history, these laws assert themselves unconsciously in the form of external necessity in the midst of an endless series of seeming accidents.

"Thereby the dialectic of the concept itself became merely the conscious reflection of the dialectical motion of the real world and the dialectic of Hegel was placed upon its head; or rather, turned off its head, on which it was standing before, and placed on its feet again...

"In this way, however, the revolutionary side of Hegelian philosophy was again taken up and at the same time freed from the idealist trammels which in Hegel's hands had prevented its consistent execution."[1]

This materialist understanding of dialectics is the key to understanding the forces of development within the material world itself, without recourse to outside causes.

This discovery arises from the whole advance of science

[1] Engels, *Ludwig Feuerbach*, Chapter IV.

and philosophy.

But above all it arises from the investigation of the laws of society, an investigation made imperative thanks to the very development of society — from the discovery of the contradictions of capitalism, explaining the forces of social development, and thereby showing the way forward from capitalism to socialism.

That is why bourgeois thinkers could not answer the problem of explaining the real material forces of development in nature and society. To answer this problem was to condemn the capitalist system. And here they had a blind spot. Only the revolutionary philosophy of the vanguard of the revolutionary class, the working class, could do it.

Marx's discovery of the laws of materialist dialectics showed us how to understand the dialectical development of nature. But above all it showed us how to understand social change and how to wage the working-class struggle for socialism.

This discovery revolutionized philosophy.

It signalized the triumph of materialism over idealism, by doing away with the limitations of the merely mechanistic materialism of the past.

It likewise spelled the end of all "systems" of philosophy.

It made philosophy into a revolutionary weapon of the working people, an instrument, a method for understanding the world so as to change it.

Summing up the essential ideas of materialist dialectics Stalin wrote:

"Life always contains the new and the old, the growing and the dying, the revolutionary and the counter-

revolutionary.

"That in life which is born and grows day after day is invincible, its progress cannot be checked. That is to say, if, for example, the proletariat as a class is born and grows day after day, no matter how weak it may be today, in the long run it must conquer. Why? Because it is growing, gaining strength and marching forward. On the other hand, that in life which grows old and is advancing to its grave, must inevitably sustain defeat, even if today it represents a titanic force. That is to say, if, for example, the ground is gradually slipping further and further back from under the feet of the bourgeoisie, and the latter is slipping further and further back every day, no matter how strong it may be today, it must, in the long run, sustain defeat."[1]

Thus the materialist dialectics of Marx shows us the way forward and gives us unshakable confidence in our cause.

[1] Joseph Stalin, *Anarchism or Socialism?,* Chapter I, Moscow, 1950.

PART TWO: DIALECTICS

6. Dialectics and Metaphysics

Dialectics, as a method of investigation, a method of thinking, is opposed to metaphysics. The metaphysical way of thinking deals with abstractions. It considers things each by itself, in abstraction from their real conditions of existence and interconnections; and it considers things as fixed and frozen, in abstraction from their real change and development. Consequently it invents rigid formulas and is always posing hard and fast antitheses — "either-or." It fails to comprehend the unity and struggle of opposite processes and tendencies manifested in all phenomena of nature and society.

In contrast to metaphysics, the aim of dialectics is to trace the real changes and interconnection in the world and to think of things always in their real motion and interconnection.

Dialectical materialism, the world outlook of the Marxist-Leninist Party, is materialist in its theory, its interpretation and explanation of everything, dialectical in its method.

We have seen how materialist explanation is opposed to idealist explanation. And then we saw how materialists formerly interpreted things in a mechanist way, but how mechanistic materialism proved inadequate to explain real processes of change and development. For this we need materialist dialectics. We need to study and understand things dialectically.

The dialectical method is, indeed, nothing but the method of studying and understanding things in their real change and development.

As such, it stands opposed to *metaphysics.*

What is metaphysics? Or more exactly, what is the metaphysical way of thinking, which is opposed by the dialectical way of thinking?

Metaphysics is essentially an abstract way of thinking. In a sense all thinking is "abstract," since it works with general concepts and cannot but disregard a great deal of particular and unessential detail. For example, if we say that "men have two legs," we are thinking of the two-leggedness of men in abstraction from their other properties, such as having a head, two arms and so on; and similarly we are thinking of all men in general, disregarding the individuality of particular men, of Peter, Paul and so on. But there is abstraction and abstraction. Metaphysics is distinguished by the fact that it makes false, misleading abstractions. As Engels once pointed out, "the art of working with concepts is not inborn... but requires real thought";[1] the art of right thinking involves learning how to avoid metaphysical abstraction.

Suppose, for example, we are thinking about men, about "human nature." Then we should think about human nature in such a way that we recognize that men live in society and that their human nature cannot be independent of their living in society but develops and changes with the development of society. We shall then form ideas about human nature which correspond to the actual conditions of men's existence and to their change and development. But yet people often think about "human nature" in a very different way,

[1] Engels, *Anti-Dühring*, Preface.

as though there were such a thing as "human nature" which manifested itself quite independent of the actual conditions of human existence and which was always and everywhere exactly the same. To think in such a way is obviously to make a false, misleading abstraction. And it is just such an abstract way of thinking that we call "metaphysics."

The concept of fixed, unchanging "human nature" is an example of metaphysical abstraction, of the metaphysical way of thinking.

The metaphysician does not think in terms of real *men,* but of "Man" in the abstract.

Metaphysics, or the metaphysical way of thinking, is, then, that way of thinking which thinks of things (1) in abstraction from their conditions of existence, and (2) in abstraction from their change and development. It thinks of things (1) in separation one from another, ignoring their interconnections, and (2) as fixed and frozen, ignoring their change and development.

One example of metaphysics has already been given. It is not difficult to find plenty more. Indeed, the metaphysical way of thinking is so widespread, and has become so much part and parcel of current bourgeois ideology, that there is hardly an article in a journal, a talk on the radio, or a book by a learned professor, in which examples of metaphysical fallacy are not to be found.

A good deal is said and written, for example, about democracy. But the speakers and writers usually refer to some pure or absolute democracy, which they seek to define in abstraction from the actual development of society, of classes and of class struggle. But there can be no such pure

democracy; it is a metaphysical abstraction. If we want to understand democracy we have always to ask: democracy for whom, for the exploiters or the exploited? We have to understand that since democracy is a form of government, there is no democracy which is not associated with the rule of some particular class, and that the democracy which is established when the working class is the ruling class is a higher form of democracy than capitalist democracy, just as capitalist democracy is a higher form of democracy than, say, the slave-owners' democracy of ancient Greece. In other words, we should not try to think of democracy in abstraction from real social relations and from the real change and development of society.

Again, pacifists try to base their opposition to war on the idea that "all wars are wrong." They think of war in the abstract, without reflecting that the character of each particular war is determined according to the historical epoch, the aims of the war and the classes in whose interests it is fought. Consequently they fail to distinguish between imperialist wars and wars of liberation, between unjust war and just war.

In most British schools today the children are regularly subjected to "intelligence tests." It is alleged that each child possesses a certain fixed quantity of "intelligence," which can be estimated without regard to the actual conditions of the child's existence and which determines his capabilities throughout the whole of his life regardless of whatever conditions for change and development may subsequently come in his way. This is another example of metaphysics. In this case the metaphysical conception of "intelligence" is used as

an excuse for denying educational opportunities to the majority of children on the grounds that their intelligence is too low for them to benefit from such opportunities.

In general, metaphysics is a way of thinking which tries to fix the nature, properties and potentialities of everything it considers once and for all. Consequently it presupposes that each thing has a fixed nature and fixed properties.

And it thinks in terms of "things" rather than "processes." It tries to sum up everything in a formula, which says that the whole world, or any part of the world which is under consideration, consists of just such and such things with such and such properties. Such a formula we may call a "metaphysical" formula.

Thus Engels refers to "the old method of investigation and thought which Hegel calls 'metaphysical,' which preferred to investigate *things* as given, as fixed and stable."[1]

In philosophy, metaphysics often means the search for the "ultimate constituents of the universe." Thus the materialists who said that the ultimate constituents were small, solid, material particles were just as much metaphysicians as the idealists who said that the ultimate constituents were spirits. All such philosophers thought they could sum up "the ultimate nature of the universe" in some formula. Some have held this formula, some that, but all have been metaphysicians. Yet it has been a hopeless quest. We cannot sum up the whole infinite changing universe in any such formula. And the more we find out about it, the more is this evident.

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[1] Engels, *Ludwig Feuerbach*, Chapter IV.

It should now be clear that the mechanistic materialism which we discussed in the preceding chapters can equally well be called *metaphysical* materialism.

We may also note, in passing, that certain philosophers today, the so-called positivists,[1] claim to be against "metaphysics" because they claim to reject any philosophy which seeks for "the ultimate constituents of the universe." For them, "metaphysics" means any theory which deals with "ultimates" not verifiable in sense-experience. By using the term in this way, they conceal the fact that they themselves are, if anything, more metaphysical than any other philosophers. For their own mode of thinking reaches extremes of metaphysical abstraction. What could be more metaphysical than to imagine, as the positivist philosophers do, that our sense-experience exists in abstraction from the real material world outside us? Indeed, they themselves make "sense-experience" into a metaphysical "ultimate."

In opposition to the abstract, metaphysical way of thinking, dialectics teaches us to think of things in their real changes and interconnections. To think dialectically is to think concretely, and to think concretely is to think dialectically. When we oppose the dialectical method to metaphysics, then we show up the inadequacy, one-sidedness or falsity of the abstractions of metaphysics.

This consideration enables us to understand the original meaning of the term "dialectics." The word is derived from

[1] The positivists say we have no right to assert that anything exists except our own sense-perceptions. They say that to assert anything else is "metaphysics."

the Greek *dialego,* meaning to discuss or debate. It was considered that to discuss a question from all sides, and from all angles, allowing different one-sided points of view to oppose and contradict each other during the debate, was the best method of arriving at the truth. Such was the dialectics employed, for example, by Socrates. When anyone claimed to have a formula which answered some questions once and for all, Socrates would enter into discussion with him and, by forcing him to consider the question from different angles, would compel him to contradict himself and so to admit that his formula was false. By this method Socrates considered that it was possible to arrive at more adequate ideas about things.

The Marxist dialectical method develops from and includes dialectics in the sense in which it was understood by the Greeks. But it is far richer in content, far wider in its scope. As a result, it becomes something qualitatively *new* as compared with pre-Marxist dialectics — a new revolutionary method. For it is combined with a consistent materialism and ceases to be a mere method of argument, becoming a method of investigation applicable to both nature and society, a method of materialist understanding of the world which grows out of and guides the activity of changing the world.

The Metaphysical "Either-Or"

Metaphysics presupposes that each thing has its own fixed nature, its own fixed properties, and considers each thing by itself, in isolation. It tries to settle the nature and properties of each thing as a given, separate object of

investigation, not considering things in their interconnection and in their change and development.

Because of this, metaphysics thinks of things in terms of hard and fast antitheses. It opposes things of one sort to things of another sort: if a thing is of one sort, it has one set of properties; if of another sort, it has another set of properties; the one excludes the other, and each is thought of in separation from the other.

Thus Engels writes:

"To the metaphysician, things and their mental images, ideas, are isolated, to be considered one after the other, apart from each other, rigid fixed objects of investigation given once and for all. He thinks in absolutely irreconcilable antitheses. 'His communication is Yea, yea, Nay, nay, for whatever is more than these cometh of evil.' For him a thing either exists or it does not exist; it is equally impossible for a thing to be itself and at the same time something else."[1]

Philosophers have expressed the essence of this metaphysical way of thinking in the formula: "Each thing is what it is, and not another thing." This may sound no more than plain common sense. But that only shows that so-called common sense itself conceals misleading ideas which need to be brought into the open. This way of thinking prevents us from studying things in their real changes and interconnections — in all their contradictory aspects and relationships, in their process of changing from "one thing" into "another thing."

It is not only philosophers who are metaphysicians.

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[1] Engels, *Anti-Dühring*, Introduction.

There are left-wing trade unionists, for example, who are as metaphysical as any school of philosophers. For them everyone at their trade union local meeting is either a class-conscious militant or else he is a right-wing opportunist. Everyone must fit into one or other category, and once he is down as "right wing" he is finished so far as they are concerned. That some worker who has been their opponent in the past and on some issues may yet prove an ally in the future and on other issues is not allowed for in their metaphysical outlook on life.

In one of Moliere's plays there is a man who learns for the first time about prose. When they explain to him what prose is, he exclaims: "Why, I've been speaking prose all my life!"

Similarly, there are many workers who may well say: "Why, I've been a metaphysician all my life!"

The metaphysician has his formula ready for everything. He says — Either this formula fits or it does not. If it does, that settles it. If it does not, then he has some alternative formula ready. "Either-or, but not both" is his motto. A thing is either this or that; it has either this set of properties or that set of properties; two things stand to one another either in this relationship or in that.

The use of the metaphysical "either-or" leads people into countless difficulties.

For example, difficulties are felt in understanding the relations between American and British imperialism today. For it is argued: Either they are working together, or else they are not. If they are working together, then there is no rift between them; if there is a rift between them, then they

are not working together. But on the contrary, they are working together and yet there are rifts between them; and we cannot understand the way they work together nor fight them effectively unless we understand the rifts which divide them.

Again, difficulties are felt in understanding the possibility of the peaceful co-existence of capitalist and socialist states. For it is argued: Either they can co-exist peacefully, in which case antagonism between capitalism and socialism must cease; or else the antagonism remains, in which case they cannot co-exist peacefully. But on the contrary, the antagonism remains, and yet the striving of the socialist states and of millions of people in all countries for peace can prevent a war between capitalist and socialist states.

It is often difficult to avoid a metaphysical way of thinking. And this is because, misleading as it is, it yet has its roots in something very necessary and useful.

It is necessary for us to classify things — to have some system of classifying them and assigning their properties and relations. That is a prerequisite of clear thinking. We have to work out what different kinds of things there are in the world, to say that these have these properties as distinct from those which have those other properties, and to say what are their relations.

But when we go on to consider these things and properties and relations each in isolation, as fixed constants, as mutually exclusive terms, then we begin to go wrong. For everything in the world has many different and indeed contradictory aspects, exists in intimate relationship with other things and not in isolation, and is subject to change. And so

it frequently happens that when we classify something as "A" and not "B," then this formula is upset by its changing from "A" into "B," or by its being "A" in some relationships and "B" in others, or by its having a contradictory nature, part "A" and part "B."

For example, we all know the difference between birds and mammals, and that while birds lay eggs mammals, in general, produce their young alive and suckle them. Naturalists used to believe that mammals were rigidly distinguished from birds because, among other things, mammals do not lay eggs. But this formula was completely upset when an animal called the platypus was discovered, for while the platypus is undoubtedly a mammal, it is a mammal which lays eggs. What is the explanation of this irregular behaviour of the platypus? It is to be found in the evolutionary relationship of birds and mammals, which are both descended from original egg-laying animals. The birds have continued to lay eggs while the mammals stopped doing so — except for a few conservative animals like the platypus. If we think of animals in their evolution, their development, this appears very natural. But if we try, as the older naturalists tried, to make them fit into some rigid, fixed scheme of classification, then the products of evolution upset that classification.

Again, an idea or a theory which was progressive in one set of circumstances, when it first arose, cannot for that reason be labelled "progressive" in an absolute sense, since it may later become reactionary in new circumstances. For instance, mechanistic materialism when it first arose was a progressive theory. But we cannot say that it is still progressive today. On the contrary, under the new circumstances which

have arisen mechanistic theory has become retrograde, reactionary. Mechanism, which was progressive in the rising phase of capitalism, goes hand in hand with idealism as part of the ideology of capitalism in decay.

Common sense, too recognizes the limitation of the metaphysical way of thinking.

For example: When is a man bald? Common sense recognizes that though we can distinguish bald men from non-bald men, nevertheless baldness develops through a process of losing one's hair, and therefore men in the midst of this process enter into a phase in which we cannot say absolutely either that they are bald or that they are not: they are in process of becoming bald. The metaphysical "either-or" breaks down.

In all these examples we are confronted with the distinction between an *objective process,* in which something undergoes change, and the *concepts* in terms of which we try to sum up the characteristics of the things involved in the process. Such concepts never do and never can always and in all respects correspond to their objects, precisely because the objects are undergoing change. Thus Engels writes:

"Are the concepts that prevail in natural science fictions because they by no means always coincide with reality? From the moment we accept the theory of evolution all our concepts of organic life correspond only approximately to reality. Otherwise there would be no change; on the day that concept and reality absolutely coincide in the organic world, development is at an end."[1]

[1] Karl Marx and Frederick Engels, Selected Correspondence, *Engels*

And he pointed out that similar considerations apply to all concepts without exception.

The Unity and Struggle of Opposites

When we think of the properties of things, their relationships, their modes of action and interaction, the processes into which they enter, then we find that, generally speaking, all these properties, relationships, interactions and processes divide into *fundamental opposites.*

For example, if we think of the simplest ways in which two bodies can act on one another, then we find that this action is either repulsion or attraction.

If we consider the electrical properties of bodies, then there is positive and negative electricity.

In organic life, there is the building up of organic compounds and the breaking down of them.

Again, in mathematics, there is addition and subtraction, plus and minus.

And in general, whatever sphere of enquiry we may be considering, we find that it involves such fundamental opposites. We find ourselves considering, not just a number of *different* things, *different* properties, *different* relations, *different* processes, but pairs of *opposites,* fundamental *oppositions.* As Hegel put it: "In opposition, the different is not confronted by any other, but by *its* other."[1]

Thus if we think of the forces acting between two bodies, there are not just a number of different forces, but they

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to Schmidt, March 12, 1895, New York 1942.

[1] Hegel, *Encyclopaedia of Philosophical Sciences: Logic*, Section 119.

divide into attractive and repulsive forces; if we think of electric charges, there are not just a number of different charges, but they divide into positive and negative; and so on. Attraction stands opposed to repulsion, positive electricity to negative electricity.

Such fundamental oppositions are not understood by the metaphysical way of thinking.

In the first place, the metaphysical way of thinking tries to ignore and discount opposition. It seeks to understand a given subject-matter simply in terms of a whole number of different properties and different relations of things, ignoring the fundamental oppositions which are manifested in these properties and relations. Thus those who think in metaphysical terms about class-divided societies, for example, try to understand society as consisting merely of a large number of different individuals connected together by all kinds of different social relations — but they ignore the fundamental opposition of exploiters and exploited, manifested in all those social relations.

In the second place, when the metaphysical way of thinking does nevertheless come upon the fundamental oppositions and cannot ignore them, then — true to its habit of thinking of each thing in isolation, as a fixed constant — it considers these opposites each in isolation from the other, understands them separately and as each excluding the other. Thus, for example, the older physicists used to think of positive and negative electricity just simply as two different "electrical fluids."

But contrary to metaphysics, not only are fundamental opposites involved in every subject-matter, but these

opposites mutually imply each other, are inseparably connected together, and, far from being exclusive, neither can exist or be understood except in relation to the other.

This characteristic of opposition is known as polarity: Fundamental opposites are polar opposites. A magnet, for example, has two poles, a north pole and a south pole. But these poles, opposite and distinct, cannot exist in separation. If the magnet is cut in two, there is not a north pole in one half and a south pole in the other, but north and south poles recur in each half. The north pole exists only as the opposite of the south, and vice versa; the one can be defined only as the opposite of the other.

In general, fundamental opposition has to be understood as polar opposition, and every subject-matter has to be understood in terms of the polar opposition involved in it.

Thus in physics we find that attraction and repulsion are involved in every physical process in such a way that they cannot be separated or isolated the one from the other. In considering living bodies, we do not find in some cases the building up of organic compounds and in other cases their breaking down, but every life process involves both the building up and the breaking down of organic compounds. In capitalist society the increasing socialization of labour is inseparable from its opposite, the increasing centralization of capital.

This unity of opposites — the fact that opposites cannot be understood in separation one from another, but only in their inseparable connection in every field of investigation — is strikingly exemplified in mathematics. Here the

fundamental operations are the two opposites, addition and subtraction. And so far is it from being the case that addition and subtraction can be understood each apart from the other, that addition can be represented as subtraction and vice versa; thus the operation of subtraction (a — b) can be represented as an addition (— b + a). Similarly a division a/b can be represented as a multiplication a x (1/b).[1]

The unity of opposites, their inseparable connection, is by no means to be understood as a harmonious and stable relationship, as a state of equilibrium. On the contrary, "The unity of opposites is conditional, temporary, transitory, relative. The struggle of mutually exclusive opposites is absolute, just as development and motion are absolute."[2]

The existence of fundamental polar oppositions, manifesting themselves in every department of nature and society, expresses itself in the *conflict* and *struggle* of opposed tendencies, which, despite phases of temporary equilibrium, lead to continual motion and development, to a perpetual coming into being and passing away of everything in existence, to sharp changes of state and transformations.

Thus, for example, the equilibrium of attractive and repulsive forces in the physical world is never more than conditional and temporary; the conflict and struggle of attraction and repulsion always asserts itself, issuing in physical changes and transformations, whether transformations on an atomic scale, chemical changes or, on a grand scale, in the explosion of stars.

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[1] Engels, *Dialectics of Nature*, Chapter 7, "Note on Mathematics."
[2] Lenin, Selected Works, Vol. 11, "On Dialectics."

To sum up.

Metaphysics thinks in terms of "ready-made" things, whose properties and potentialities it seeks to fix and determine once and for all. It considers each thing by itself, in isolation from every other, in terms of irreconcilable antitheses — "either-or." It contrasts one thing to another, one property to another, one relationship to another, not considering things in their real movement and interconnection, and not considering that every subject-matter represents a unity of opposites — opposed but inseparably connected together.

Contrary to metaphysics, dialectics refuses to think of things each by itself, as having a fixed nature and fixed properties — "either-or" — but it recognizes that things come into being, exist and cease to be, in a process of unending change and development, in a process of complicated and ever-changing interrelationship, in which each thing exists only in its connection with other things and goes through a series of transformations, and in which is always manifested the unity, inseparable interconnection and struggle of the opposite properties, aspects, tendencies characteristic of every phenomenon of nature and society.

Contrary to metaphysics, the aim of dialectics is to trace the real changes and interconnections in the world and to think of things always in their motion and interconnection.

Thus Engels writes:

"The world is not to be comprehended as a complex of ready-made things but as a complex of processes... One no

longer permits oneself to be imposed upon by the antitheses insuperable for the old metaphysics."[1]

"The old rigid antitheses, the sharp impassable dividing lines are more and more disappearing... The recognition that these antagonisms and distinctions are in fact to be found in nature but only with relative validity, and that on the other hand their imagined rigidity and absoluteness have been introduced into nature only by our minds — this recognition is the kernel of the dialectical conception of nature."[2]

"Dialectics... grasps things and their images, ideas, essentially in their inter-connection, in their sequence, their movement, their birth and death."[3]

Lenin wrote that the understanding of the "contradictory parts" of every phenomenon was "the essence of dialectics." It consists in "the recognition (discovery) of the contradictory, mutually exclusive, opposite tendencies in all phenomena and processes of nature, including mind and society."[4]

Lastly, Marx wrote that: "dialectic... in its rational form is a scandal and abomination to bourgeoisdom and its doctrinaire professors, because it includes in its comprehension and affirmative recognition of the existing state of things, at the same time also, the recognition of the negation of that state, of its inevitable breaking up; because it regards every historically developed social form as in fluid movement, and

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[1] Engels, *Ludwig Feuerbach*, Chapter IV.
[2] *Anti-Dühring,* Preface.
[3] *Ibid.*, Introduction.
[4] Lenin, Selected Works, Vol. 11, "On Dialectics."

therefore takes into account its transient nature not less than its momentary existence; because it lets nothing impose upon it, and is in its essence critical and revolutionary."[1]

[1] Karl Marx, *Capital*, Vol. I, Preface to the second edition, New York 1947.

7. Change and Interconnection

The Marxist dialectical method demands that we must always consider things, not in isolation, but in their interconnection with other things, in relation to the actual conditions and circumstances of each case; and that we must consider things in their change and movement, their coming into being and going out of being, always taking particularly into account what is new, what is rising and developing.

It follows that the Marxist dialectical method forbids the employment of "ready-made schemes" and abstract formulas, but demands the thorough, detailed analysis of a process in all its concreteness, basing its conclusions only on such an analysis.

Four Principal Features of the Marxist Dialectical Method

In his *Dialectical and Historical Materialism* Stalin said that there are four principal features of the Marxist dialectical method.

(1) Contrary to metaphysics, dialectics does not regard nature as just an agglomeration of things, each existing independently of the others, but it considers things as "connected with, dependent on and determined by each other." Hence it considers that nothing can be understood taken by itself, in isolation, but must always be understood "in its inseparable connection with other things, and as conditioned by them."

(2) Contrary to metaphysics, dialectics considers everything as in "a state of continuous movement and change, of renewal and development, where something is always arising and developing and something always disintegrating and dying away." Hence it considers things "not only from the

standpoint of their interconnection and interdependence, but also from the standpoint of their movement, their change, their development, their coming into being and going out of being."

(3) Contrary to metaphysics, dialectics does not regard the: process of development as "a simple process of growth," but as "a development which passes from... quantitative changes to open, fundamental changes, to qualitative changes," which occur "abruptly, taking the form of a leap from one state to another." Hence it considers development as "an onward and upward movement, as a transition from an old qualitative state to a new qualitative state, as a development from the simple to the complex, from the lower to the higher."

(4) Contrary to metaphysics, dialectics "holds that the process of development from the lower to the higher takes place... as a disclosure of the contradictions inherent in things... as a struggle of opposite tendencies which operate on the basis of these contradictions."

We shall postpone until the next chapter consideration of the latter two features, which concern the process of development from one qualitative state to another, from the lower to the higher. In this chapter we shall consider the first two features of the dialectical method, namely, that it considers things always in their interconnection and in their movement and change.

Considering Things in Their Interconnection and Circumstances

The dialectical method demands, first, that we should

consider things, not each by itself, but always in their interconnection with other things.

This sounds "obvious." Nevertheless it is an "obvious" principle which is very often ignored and is extremely important to remember. We have already considered it and some examples of its application in discussing metaphysics, since the very essence of metaphysics is to think of things in an abstract way, isolated from their relations with other things and from the concrete circumstances in which they exist.

The principle of considering things in relation to actual conditions and circumstances, and not apart from those actual conditions and circumstances, is always of fundamental importance for the working-class movement in deciding the most elementary questions of policy.

For example, there was a time when the British workers were fighting for a ten-hour day. They were right at that time not to make their immediate demand an eight-hour day, since this was not yet a realizable demand. They were equally right, when they got a ten-hour day, not to be satisfied with it.

There are times when it is correct for a section of workers to come out on strike, and there are times when it is not correct. Such matters have to be judged according to the actual circumstances of the case. Similarly there are times when it is correct to go on prolonging and extending a strike, and there are times when it is correct to call it off.

No working-class leader can be of very much value if he tries to decide questions of policy in terms of "general principle" alone, without taking into account the actual

circumstances in relation to which policy has to be operated, without understanding that the same policy can be right in one case and wrong in another, depending on the concrete circumstances of each case.

Thus Lenin wrote:

"Of course, in politics, in which sometimes extremely complicated — national and international — relationships between classes and parties have to be dealt with... it would be absurd to concoct a recipe, or general rule... that would serve in all cases. One must have the brains to analyse the situation in each separate case."[1]

This readiness on the part of Marxists to adapt policy to circumstances and to change policy with circumstances is sometimes called Communist "opportunism." But it is nothing of the kind — or rather, it is the very opposite. It is the application in practice of the science of the strategy and tactics of working-class struggle. Indeed, what is meant by opportunism in relation to working-class policy? It means subordinating the long-term interests of the working class as a whole to the temporary interests of a section, sacrificing the interests of the class to defence of the temporary privileges of some particular group. Communists are guided by Marx's principle that "they always and everywhere represent the interests of the movement as a whole."[2] And this requires that, in the interests of the movement as a whole, one must analyse the situation in each separate case, deciding what policy to pursue in each case in the light of the concrete

[1] Lenin, *Left-wing Communism*, Chapter VIII, New York 1934.

[2] Marx and Engels, *The Communist Manifesto*, Chapter II.

circumstances.

On general questions, too, the greatest confusion can arise from forgetting the dialectical principle that things must not be considered in isolation but in their inseparable inter-connection.

For example, the British Labour leaders once said, and many members of the Labour Party continue to say, that nationalization is an installment of socialism. They consider nationalization by itself, in isolation, out of connection with the state and with the social structure in relation to which nationalization measures are introduced. They overlook the fact that if the public power, the state, remains in the hands of the exploiters, and if their representatives sit on and control the boards of the nationalized industries, which continue to be run on the basis of exploiting the labour of one class for the profit of another class, then nationalization is not socialism. Socialist nationalization can come into being only when the public power, the state, is in the hands of the workers.

Again, in political arguments people very often appeal to a concept of "fairness" which leads them to judge events without the slightest consideration of the real meaning of those events, of the circumstances in which they occur. What's sauce for the goose is sauce for the gander: that is the principle employed in such arguments.

Thus it is argued that if we defend the democratic right of the workers in a capitalist country to agitate for the ending of capitalism and the introduction of socialism, then we cannot deny to others in a socialist country the right to agitate for the ending of socialism and the reintroduction of

capitalism. Those who argue like this throw up their hands in horror when they find that counter-revolutionary groupings in the USSR, who sought to restore capitalism in that country, were deprived of the possibility of carrying out their aims. Why, they exclaim, this is undemocratic, this is tyranny! Such an argument overlooks the difference between fighting in the interests of the vast majority of the people to end exploitation, and fighting in the interests of a small section to preserve or reintroduce exploitation; it overlooks the difference between defending the right of the vast majority to run their affairs in their own interests, and defending the right of a small minority to keep the majority in bondage; in other words, it overlooks the difference between moving forward and backward, between putting the clock ahead and putting it back, between revolution and counter-revolution. Of course, if we fight to achieve socialism, and if we achieve it, then we shall defend what we have achieved and shall not allow the slightest possibility of any group destroying that achievement. Let the capitalists and their hangers-on shout about democracy "in general." If, as Lenin said, we "have the brains to analyse the situation," we shall not be deceived by them.

The 'liberal" concept of "fairness" has, indeed, become a favourite weapon of reaction lately. In 1949 and again in 1950, when the fascists decided to hold a demonstration in London on May Day, the Home Secretary promptly banned the workers' May Day demonstration. If I ban one, I must ban the other, he blandly explained. How scrupulously "fair" he was!

The principle of understanding things in their

circumstances and interconnections is likewise a very important principle in science. Yet scientists, who take things to bits and consider their various properties, very often forget that things which they may consider in isolation do not exist in isolation. And this leads to serious misunderstandings.

Soviet biologists, for example, guided by this first principle of dialectics, have stressed the unity of the organism and its environment. They have pointed out that you cannot consider the organism as having a nature of its own, isolated from its environment: that is metaphysics. Thus there is no such thing as a plant, for instance, isolated from its environment: such a plant is a mere museum piece, a dead plant artificially preserved. Living plants grow in a soil, in a climate, in an environment, and they grow and develop by assimilating that environment. Thus Lysenko defined the heredity, or nature, of an organism as its requirement of certain conditions for its life and development, and its responding to various conditions in a certain way. This understanding of the unity of organism and environment had important consequences. For it led to the expectation that by compelling an organism to adapt itself to and assimilate changed conditions, its nature could be changed. And this expectation has been verified in practice.

The biologists of the Mendel-Morgan school, on the other hand, treat the organism abstractly, metaphysically, as isolated from its real conditions of life. They conceive of the "nature" of the organism as quite independent of its conditions of life. Hence they conclude, in true metaphysical style, that the heredity of an organism "is what is," and that

it is no use trying to change it in the ways in which Soviet biologists *have* changed the heredity of organisms.

Considering Things in Their Movement, Their Coming into Being and Going Out of Being

Let us now consider some examples of the second principle of dialectics, which demands that we should consider things in their movement, their change, their coming into being and going out of being.

This principle, too, is of great importance in science.

Soviet biologists, for example, guided by this principle of dialectics, have considered the organism in its growth and development. Thus at a certain stage of growth, the nature of the organism is still plastic; if you can modify it at that stage, you can often change its nature, give it a changed heredity. Something is newly coming into being in the organism, and that is the time to foster it and to give it a desired direction. But if that stage is passed, then its nature becomes fixed and you cannot change it. You must find just the right stage of growth if you wish to modify the heredity of the organism.

The biologists of the Mendel-Morgan school, on the other hand, consider the nature of the organism as given and fixed from the very start.

This second principle of dialectics teaches us always to pay attention to what is new, to what is rising and growing — not just to what exists at the moment, but to what is coming into being.

This principle is of paramount importance for revolutionary understanding, for revolutionary practice.

The Russian Bolsheviks, for example, saw from the very beginning how Russian society was moving — what was new in it, what was coming into being. They looked for what was rising and growing, though it was still weak — the working class. While others discounted the importance of the working class and finished by entering into compromises with the forces of the old society, the Bolsheviks concluded that the working class was the new, rising force, and led it to victory.

Just this same understanding of what was rising and growing and of what was disintegrating and dying away, was exemplified in Stalin's leadership during the war, 1941-45. When the Germans were before Moscow in November 1941, and all the "allied military strategists" outside the Soviet Union considered that Russia's defeat was certain, Stalin said that while the Germans were at the peak of their military power the Soviet forces, on the other hand, were still mobilizing and increasing. Therefore the defeat of the German fascists was certain.

"Germany, whose reserves of manpower are already being exhausted, has been considerably more weakened than the Soviet Union, whose reserves are only now being mobilized to the full... Can there be any doubt that we can, and are bound to, defeat the German invaders? The German invaders are straining their last efforts. There is no doubt that Germany cannot sustain such a strain for long."[1]

Similarly today, when press and radio are full of the

[1] Stalin, *The Great Patriotic War of the Soviet Union*, Speeches of November 6 and 7, 1941, New York 1945.

boasts and threats of the American imperialists and their henchmen, we stress that which is rising and growing all over the world, the people's camp of peace, which is bound to continue to grow and to overwhelm the imperialists in shameful disaster.

Again, in the fight for unity of the working-class movement, in relation to the British Labour Party and the affiliated trade unions, we pay attention above all to that which is arising and growing in the movement. Therefore we see a great deal more than the policy of the right-wing leaders and their influence. The right wing has its basis in the past, though it is still strong and dominant. But there are arising the forces of the future, determined to fight against capitalism and war.

Similarly in relation to individual people — we should foster and build on what is coming to birth in them, what is rising and moving ahead. This is what a good secretary or organizer does.

Such examples as these show that the basis of the dialectical method, its most essential principle, is to study and understand things in their concrete interconnection and movement.

Against "Ready-made Schemes" — "Truth Is Always Concrete"

Sometimes people imagine that dialectics is a preconceived scheme, into the pattern of which everything is supposed to fit. This is the very opposite of the truth about dialectics. The employment of the Marxist dialectical method does not mean that we apply a preconceived scheme and try to make everything fit into it. No, it means that we study

things as they really are, in their real interconnection and movement.

This is something which Lenin insisted on again and again. Indeed, he proclaimed it as "the fundamental thesis of dialectics." "Genuine dialectics," Lenin wrote, proceeds "by means of a thorough, detailed analysis of a process in all its concreteness. The fundamental thesis of dialectics is: there is no such thing as abstract truth, truth is always concrete."[1]

What did he mean by "truth is always concrete"? Just that we will not get at the truth about things, about either nature or society, by thinking up some general scheme, some abstract formula; but only by trying to work out as regards each process just what are the forces at work, how they are related, which are rising and growing and which are decaying and dying away, and on this basis reaching an estimate of the process as a whole.

So Engels said: "There could be no question of building the laws of dialectics into nature, but of discovering them in it and evolving them from it... Nature is the test of dialectics."[2]

As regards the study of society, and the estimate we make of real social changes on which we base our political strategy, Lenin ridiculed those who took some abstract, preconceived scheme as their guide.

According to some "authorities," the Marxist dialectics

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[1] V.I. Lenin, Selected Works, Vol. 2, *One Step Forward, Two Steps Back*, Section R, "Something about Dialectics."

[2] Engels, *Anti-Dühring*, Preface and Introduction.

laid it down that all development must proceed through "triads" — thesis, antithesis, synthesis. Lenin ridiculed this.

"It is clear to everybody that the main burden of Engels' argument is that materialists must depict the historical process correctly and accurately, and that insistence on... selection of examples which demonstrate the correctness of the triad is nothing but a relic of Hegelianism... And, indeed, once it has been categorically declared that to attempt to 'prove' anything by triads is absurd, what significance can examples of 'dialectical' process have?... Anyone who reads the definition and description of the dialectical method given by Engels will see that the Hegelian triads are not even mentioned, and that it all amounts to regarding social evolution as a natural-historical process of development...

"What Marx and Engels called the dialectical method... is nothing more nor less than the scientific method in sociology, which consists in regarding society as a living organism in a constant state of development... the study of which requires an objective analysis of the relations of production that constitute the given social formation and an investigation of its laws of functioning and development."[1]

Let us consider some examples of what the "analysis of a process in all its concreteness" and the principle that "truth is always concrete" mean, in contrast to the method of trying to lay down some preconceived scheme of social development and of appealing to such a scheme as a basis for policy.

In tsarist Russia the Mensheviks used to say: "We must

[1] Lenin, Selected Works, Vol. 1, "What the Friends of the People Are and How They Fight Against the Social Democrats," Part I.

have capitalism before socialism." First capitalism must go through its full development, then socialism will follow: that was their scheme. Consequently they supported the liberals in politics and enjoined the workers to do no more than fight for better conditions in the capitalist factories.

Lenin repudiated this silly scheme. He showed that the liberals, frightened by the workers, would compromise with the tsar; but that the alliance of workers with peasants could take the lead from them, overthrow the tsar, and then go on to overthrow the capitalists and build socialism before ever capitalism was able to develop fully.

After the proletarian revolution was successful, another scheme was propounded — this time by Trotsky. "You can't build socialism in one country. Unless the revolution takes place in the advanced capitalist countries, socialism cannot come in Russia." Lenin and Stalin showed that this scheme, too, was false. For even if the revolution did not take place in the advanced capitalist countries, the alliance of workers and peasants in the Soviet Union had still the forces to build socialism.

In Western European countries it used often to be said: "We must have fascism before communism." First the capitalists will abandon democracy and introduce the fascist dictatorship, and then the workers will overthrow the fascist dictatorship. But the Communists replied, no, we will fight together with all the democratic forces to preserve bourgeois democracy and to defeat the fascists, and that will create the best conditions for going forward to win working-class power and to commence to build socialism.

Lastly, today we sometimes hear the argument:

"Capitalism means war, therefore war is inevitable." True enough, so long as capitalism, which has long ago entered its last (imperialist) phase, persists, there must inevitably be conflicts between the rival powers, and these conflicts are such as to entail the inevitability of imperialist wars. But the imperialists cannot make war without the people. The more they prepare war, the more open their aggressiveness becomes, the more one power attempts to impose its domination on another, and the more hardships they impose on the people, the more can the people be rallied to oppose their war. Therefore in any instance when war threatens, that war can be prevented and postponed. And by fighting to preserve peace, we can lay the basis for ending the conditions which pose the inevitability of war. Imperialist war plans can be defeated; they can be defeated if the working class rallies all the peace-loving forces around itself. And imperialism itself, with the consequent inevitability of war, can be ended. If we defeat the imperialist war plans, that will be the best road towards the ending of capitalism itself and the building of socialism. Imperialism will not be ended by waiting for it to wreck itself in inevitable wars, but by uniting to prevent the realization of its war plans.

In all these examples it will be seen that the acceptance of some ready-made scheme, some abstract formula, means passivity, support for capitalism, betrayal of the working class and of socialism. But the dialectical approach which understands things in their concrete interconnection and movement, shows us how to forge ahead — how to fight, what allies to draw in. That is the inestimable value of the Marxist dialectical method to the working-class movement.

8. The Laws of Development

To understand development we must understand the distinction between quantitative change — increase and decrease — and qualitative change — the passing into a new state, the emergence of something new.

Quantitative change always leads at a certain critical point to qualitative change. And similarly qualitative differences and qualitative changes always rest on quantitative differences and quantitative changes.

Development must be understood, therefore, not as a simple process of growth but as a process which passes from quantitative changes to open, fundamental qualitative changes.

Further, this transformation of quantitative into qualitative changes takes place as a result of the conflict or struggle of opposite tendencies which operate on the basis of the contradictions inherent in all things and processes.

The Marxist dialectical method, therefore, teaches us to understand processes of development in terms of the transformation of quantitative into qualitative changes, and to seek the grounds and the explanation of such development in the unity and struggle of opposites.

What Do We Mean by "Development"?

In stressing the need to study real processes in their movement and in all their interconnections, Stalin pointed out that in the processes of nature and history there is always "renewal and development, where something is always arising and developing and something always disintegrating and

dying away."[1] When that which is arising and developing comes to fruition, and that which is disintegrating and dying away finally disappears, there emerges something *new.*

For as we saw in criticizing mechanistic materialism, processes do not always keep repeating the same cycle of changes, but advance from stage to stage as something new continually emerges.

This is the real meaning of the word "development." We speak of "development" where stage by stage something new keeps emerging.

Thus there is a difference between mere *change* and development. Development is change proceeding according to its own internal laws from stage to stage.

And there is equally a difference between *growth* and development. This difference is familiar to biologists, for example. Thus growth means getting bigger- — merely quantitative change. But development means, not getting bigger, but passing into a qualitatively new stage, becoming qualitatively different. For example, a caterpillar grows longer and fatter; then it spins itself a cocoon, and finally emerges as a butterfly. This is development. A caterpillar *grows* into a bigger caterpillar; it *develops* into a butterfly.

Processes of nature and history exemplify, not merely change, not merely growth, but development. Can we, then, reach any conclusions about the general laws of development? This is the further task of materialist dialectics — to find what general laws are manifested in all development, and to give us, therefore, the *method of approach* for

[1] *Stalin, Dialectical and Historical Materialism.*

understanding, explaining and controlling development.

Quantity and Quality: The Law of the Transformation of Quantitative into Qualitative Changes

This brings us to the two latter features of the Marxist dialectical method, as explained by Stalin. The first of these may be called "the law of the transformation of quantitative into qualitative change." What does this mean?

All change has a quantitative aspect, that is, an aspect of mere increase or decrease which does not alter the nature of that which changes. But quantitative change, increase or decrease, cannot go on indefinitely. At a certain point it always leads to a qualitative change; and at that critical point (or "nodal point," as Hegel called it) the qualitative change takes place relatively suddenly, by a leap, as it were.

For example, if water is being heated, it does not go on getting hotter and hotter indefinitely; at a certain critical temperature, it begins to turn into steam, undergoing a qualitative change from liquid to gas. A cord used to lift a weight may have a greater and greater load attached to it, but no cord can lift a load indefinitely great: at a certain point, the cord is bound to break. A boiler may withstand a greater and greater pressure of steam — up to the point where it bursts. A variety of plant may be subjected to a series of changes in its conditions of growth for a number of generations — for instance, to colder temperatures; the variety continues unchanged, until a point is reached when suddenly a qualitative change is induced, a change in the heredity of the plant. In this way spring wheats have been transformed into winter wheats, and vice versa, as a result of

the accumulation of a series of quantitative changes.

This law of the transformation of quantitative into qualitative change is also met with in society. Thus before the system of industrial capitalism comes into being there takes place a process of the accumulation of wealth in money form in a few private hands (largely by colonial plunder), and of the formation of a propertyless proletariat (by enclosures and the driving of peasants off the land). At a certain point in this process, when *enough* money is accumulated to provide capital for industrial undertakings, when *enough* people have been proletarianized to provide the labour required, the conditions have matured for the development of industrial capitalism. At this point an accumulation of quantitative changes gives rise to a new qualitative stage in the development of society.

In general, qualitative changes happen with relative suddenness — by a leap. Something new is suddenly born, though its potentiality was already contained in the gradual evolutionary process of continuous quantitative change which went before.

Thus we find that continuous, gradual quantitative change leads at a certain point to discontinuous, sudden qualitative change. We have already remarked in an earlier chapter that most of those who have considered the laws of development in nature and society have conceived of this development only in its continuous aspect. This means that they have considered it only from the aspect of a process of growth, of quantitative change, and have not considered its qualitative aspect, the fact that at a certain point in the gradual process of growth a new quality suddenly arises, a

transformation takes place.

Yet this is what always happens. If you are boiling a kettle, the water suddenly begins to boil when boiling point is reached. If you are scrambling eggs, the mixture in the pan suddenly "scrambles." And it is the same if you are engaged in changing society. We will only change capitalist society into socialist society when the rule of one class is replaced by the rule of another class — and this is a radical transformation, a leap to a new state of society, a revolution.

If, on the other hand, we consider quality itself, then qualitative change always arises as a result of an accumulation of quantitative changes, and differences in quality have their basis in differences of quantity.

Thus just as quantitative change must at a certain point give rise to qualitative change, so if we wish to bring about qualitative change we must study its quantitative basis, and know what must be increased and what diminished if the required change is to be brought about.

Natural science teaches us how purely quantitative difference — addition or subtraction — makes a qualitative difference in nature. For example, the addition of one proton in the nucleus of an atom makes the transition from one element to another.[1] The atoms of all the elements are formed out of combinations of the same protons and electrons, but a purely quantitative difference between the numbers combined in the atom gives different kinds of atoms,

[1] For a simple account of the physical phenomena referred to in this and in our next example see *The Challenge of Atomic Energy*, by E.H.S. Burhop, London 1951.

atoms of different elements with different chemical properties. Thus an atom consisting of one proton and one electron is a hydrogen atom, but if another proton and another electron are added it is an atom of helium, and so on. Similarly in chemical compounds, the addition of one atom to a molecule makes the difference between substances with different chemical properties. In general, different qualities have their basis in quantitative difference.

As Engels put it:

"In nature, in a manner exactly fixed for each individual case, qualitative changes can only occur by the quantitative addition or subtraction of matter or motion...

"All qualitative differences in nature rest on differences of chemical composition or on different quantities or forms of motion or, as is almost always the case, on both. Hence it is impossible to alter the quality of a body without addition or subtraction of matter or motion, *i.e.* without quantitative alteration of the body concerned."[1]

This feature of the dialectical law connecting quality and quantity is familiar to readers of the popular literature about atomic bombs. To make a uranium bomb it is necessary to have the isotope, uranium-235; the more common isotope, uranium-238, will not do. The difference between these two is merely quantitative, a difference in atomic weight, depending on the number of neutrons present in each case. But this quantitative difference of atomic weight, 235 and 238, makes the qualitative difference between a substance with the properties required for the bomb and a substance

[1] Engels, *Dialectics of Nature*, Chapter II.

without those properties. Further, having got a quantity of uranium-235, a certain "critical mass" of it is required before it will explode. If there is not enough, the chain reaction which constitutes the explosion will not occur; when the "critical mass" is reached, the reaction does occur.

Thus we see that quantitative changes are transformed at a certain point into qualitative changes, and qualitative differences rest on quantitative differences. This is a universal feature of development. What makes such development happen?

Development Takes Place Through the Unity and Struggle of Opposites

In general, the reason why in any particular case a quantitative change leads to a qualitative change lies in the very nature, in the content, of the particular processes involved. Therefore in each case we can, if we only know enough, explain just why a qualitative change is inevitable, and why it takes place at the point it does.

To explain this we have to study the facts of the case. We cannot invent an explanation with the aid of dialectics alone; where an understanding of dialectics helps is that it gives us the clue as to where to look. In a particular case we may not yet know how and why the change takes place. In that case we have the task of finding out, by investigating the facts of the case. For there is nothing unknowable, no essential mystery or secret of development, of the emergence of the qualitatively new.

Let us consider, for example, the case of the qualitative change which takes place when water boils.

When heat is applied to a mass of water contained in a kettle, then the effect is to increase the motion of the molecules composing the water. So long as the water remains in its liquid state, the forces of attraction between the molecules are sufficient to insure that, though some of the surface molecules are continually escaping, the whole mass coheres together as a mass of water inside the kettle. At boiling point, however, the motion of the molecules has become sufficiently violent for large numbers of them to begin jumping clear of the mass. A qualitative change is therefore observed. The water begins to bubble and the whole mass is rapidly transformed into steam. This change evidently occurs as a result of the oppositions operating within the mass of water — the tendency of the molecules to move apart and jump free versus the forces of attraction between them. The former tendency is reinforced to the point where it overcomes the latter as a result, in this case, of the external application of heat.

Another example we have considered is that of a cord which breaks when its load becomes too great. Here again, the qualitative change takes place as a result of the opposition set up between the tensile strength of the cord and the pull of the load. Again, when a spring wheat is transformed into a winter wheat, this is a result of the opposition between the plant's "conservatism" and the changing conditions of growth and development to which it is subjected; at a certain point, the influence of the latter overcomes the former.

These examples prepare us for the general conclusion that, as Stalin puts it, "the internal content of the process of development, the internal content of the transformation of

quantitative changes into qualitative changes" consists in the struggle of opposites — opposite tendencies, opposite forces — within the things and process concerned.

Thus the law that quantitative changes are transformed into qualitative changes, and that differences in quality are based on differences in quantity, leads us to the law of the unity and struggle of opposites.

Here is the way Stalin formulates this law of dialectics.

"Contrary to metaphysics, dialectics holds that internal contradictions are inherent in all things and phenomena of nature, for all have their negative and positive sides, a past and a future, something dying away and something developing; and that the struggle between these opposites, the struggle between the old and the new, between that which is dying away and that which is being born, between that which is disappearing and that which is developing, constitutes the internal content of the process of development, the internal content of the transformation of quantitative changes into qualitative changes.

"The dialectical method therefore holds that the process of development from the lower to the higher takes place not as a harmonious unfolding of phenomena, but as a disclosure of the contradictions inherent in things and phenomena, as a 'struggle' of opposite tendencies which operate on the basis of these contradictions."[1]

To understand development, to understand how and why quantitative changes lead to qualitative changes, to understand how and why the transition takes place from an old

[1] Stalin, *Dialectical and Historical Materialism*.

qualitative state to a new qualitative state, we have to understand the contradictions inherent in each thing and process we are considering, and how a "struggle" of opposite tendencies arises on the basis of these contradictions.

We have to understand this concretely, in each case, bearing in mind Lenin's warning that "the fundamental thesis of dialectics is: truth is always concrete." We cannot deduce the laws of development in the concrete case from the general principles of dialectics: we have to discover them by actual investigation in each case. But dialectics tells us what to look for.

Dialectics of Social Development — The Contradictions of Capitalism

The dialectics of development — the unity and struggle of opposites — has been most thoroughly worked out in the Marxist science of society. Here, from the standpoint of the working-class struggle, on the basis of working-class experience, we can work out the dialectic of the contradictions of capitalism and of their development very exactly.

But the principles involved in the development of society are not opposed to but are in essence the same as those involved in the development of nature, though different in their form of manifestation in each case. Thus Engels said:

"I was not in doubt — that amid the welter of innumerable changes taking place in nature the same dialectical laws of motion are in operation as those which in history govern the apparent fortuitousness of events."[1]

[1] Engels, *Anti-Dühring*, Preface.

How Marxism understands the contradictions of capitalism and their development, this crowning triumph of the dialectical method, was explained in general terms by Engels.

The basic contradiction of capitalism is not simply the conflict of two classes, which confront one another as two external forces which come into conflict. No, it is the contradiction within the social system itself, on the basis of which the class conflict arises and operates.

Capitalism brought about:

"The concentration of the means of production in large workshops and manufactories, their transformation into means of production which were in fact social. But the social means of production and the social products were treated as if they were still, as they had been before, the means of production and the products of individuals. Hitherto, the owner of the instruments of labour had appropriated the product because it was as a rule his own product, the auxiliary labour of other persons being the exception; now, the owner of the instruments of production continued to appropriate the product, although it was no longer *his* product, but exclusively the product of *others' labour.* Thus, therefore, the products, now socially produced, were not appropriated by those who had really set the means of production in motion and really produced the products, but by the *capitalists*."[1]

The basic contradiction of capitalism is, therefore, the

[1] Engels, *Anti-Dühring*, Part III, Chapter II; or *Socialism, Utopian and Scientific*, Chapter III, New York 1935.

contradiction between socialized production and capitalist appropriation. It is on the basis of this contradiction that the struggle between the classes develops.

"In this contradiction... the whole conflict of today is already present in germ... The contradiction between social production and capitalist appropriation became manifest as the antagonism between proletariat and bourgeoisie."[1]

And the contradiction can only be resolved by the victory of the working class, when the working class sets up its own dictatorship and initiates social ownership and appropriation to correspond to social production.

This example very exactly illustrates the point of what Stalin said about "struggle of opposite tendencies which operate on the basis of these contradictions." The class struggle exists and operates on the basis of the contradictions inherent in the social system itself.

It is from the struggle of opposite tendencies, opposing forces, arising on the basis of the contradictions inherent in the social system, that social transformation, the leap to a qualitatively new stage of social development, takes place.

This process has its quantitative aspect. The working class increases in numbers and organization. Capital becomes more concentrated, more centralized.

"Along with the constantly diminishing number of the magnates of capital... grows the mass of misery, oppression, slavery, degradation, exploitation; but with this too grows the revolt of the working class, a class always increasing in numbers, and disciplined, united, organized by the very

[1] *Ibid.*

mechanism of the process of capitalist production itself."[1]

With this quantitative process of increase and decrease, the basic contradiction of socialized labour and private appropriation becomes intensified — for the social character of labour is magnified while capital accumulates and is concentrated in the hands of a diminishing number of great "magnates of capital" — and the tension between the opposing forces becomes intensified, too. At length quantitative change gives rise to qualitative change.

"Centralization of the means of production and socialization of labour at last reach a point where they become incompatible with their capitalist integument. This integument is burst asunder. The knell of capitalist private property sounds.

"The expropriators are expropriated."[2]

In this way the laws of dialectical development, summarized in the principles of the transformation of quantitative into qualitative change and of the unity and struggle of opposites, are found at work in the development of society; this development is to be understood in terms of the operation of those laws; and this dialectical understanding, once it has become the theoretical possession of the working class, serves as an indispensable instrument of the working class in carrying into effect the socialist transformation of society.

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[1] Marx, *Capital*, Vol. I, Chapter XXXII.

[2] *Ibid.*

9. The New and the Old

The struggle of opposed forces which constitutes the driving force of development does not take place accidentally but on the basis of internal contradictions inherent in the very nature of the processes concerned. There arises a contradiction between the new and the old; that which is arising and growing contradicts that which is dying away and disappearing. And this fact is strikingly exemplified in the development of society.

In the process of development the new grows strong and overpowers the old, and this leads to the forward movement of development, in which each stage is an advance to something new, not a falling back to some stage already passed.

Since development proceeds by the overcoming and supplanting of the old by the new it follows that development can only proceed by the negation of the old and not by its preservation.

Contradictions Inherent in Things and Processes — Internal Contradictions

In the last chapter we considered how qualitative change is brought about by the struggle of opposed forces. This was exemplified equally in the change of state of a body, from liquid to solid or gas, and in the change of society from capitalism to socialism. In each case there are "opposite tendencies" at work, whose "struggle" eventuates in some fundamental transformation, a qualitative change.

This "struggle" is not external and accidental. It is not adequately understood if we suppose that it is a question of forces or tendencies arising quite independently the one of the other, which happen to meet, to bump up against each

other, so to speak, and to come into conflict.

No. The struggle is internal and necessary; for it arises and follows from the contradictory nature of the process as a whole.

The opposite tendencies are not independent the one of the other but are inseparably connected as parts or aspects of a single contradictory whole, and they operate and come into conflict on the basis of the contradiction inherent in the process as a whole.

Thus the opposed tendencies which operate in the course of the change of state of a body operate on the basis of the contradictory unity of attractive and repulsive forces inherent in all physical phenomena. And the class struggle which operates in capitalist society operates on the basis of the contradictory unity of socialized labour and private appropriation inherent in that society.

This dialectical understanding of the internal necessity of the struggle of opposed forces, and of its outcome, based on the contradictions inherent in the process as a whole, is no mere refinement of philosophical analysis. It is of very great practical importance.

Bourgeois theorists, for example, are well able to recognize the fact of class conflicts in capitalist society. What they do not recognize is the necessity of this conflict; that it is based on contradictions inherent in the very nature of the capitalist system and that, therefore, the struggle can only culminate in and end with the destruction of the system itself and its replacement by a new, higher system of society. So they seek to mitigate the class conflict, to tone it down and reconcile the opposing classes, or to stamp it out, and

so to preserve the system intact. And precisely this bourgeois understanding of the class conflict is brought into the labour movement by Social Democracy.

It is in opposition to such a shallow, metaphysical way of understanding class conflict that Lenin points out:

"The main point in the teaching of Marx is the class struggle. This has very often been said and written. But this is not true. Out of this error, here and there, springs an opportunist distortion of Marxism, such a falsification of it as to make it acceptable to the bourgeoisie. The theory of the class struggle was *not* created by Marx, but by the bourgeoisie *before* Marx and is, generally speaking, *acceptable* to the bourgeoisie. He who recognizes *only* the class struggle is not yet a Marxist; he may be found not to have gone beyond the boundaries of bourgeois reasoning and politics. To limit Marxism to the teaching of the class struggle means to curtail Marxism — to distort it, to reduce it to something which is acceptable to the bourgeoisie. A Marxist is one who *extends* the acceptance of the class struggle to the acceptance of the *dictatorship of the proletariat.* Herein lies the deepest difference between a Marxist and an ordinary petty or big bourgeois. On this touchstone it is necessary to test a *real* understanding and acceptance of Marxism."[1]

In general, we understand contradiction as inherent in, belonging to the very essence of, a given system or process; the struggle through which development takes place is not an external clash of accidentally opposed factors, but is based

[1] V.I. Lenin, *The State and Revolution*, Chapter II, Section 3, New York 1932.

on contradictions in the very essence of things; and thus is determined the necessary outcome, the necessary solution of the contradiction.

Of course, conflicts of an external, accidental character also occur in nature and society. But these are not of decisive importance in determining the course of development.

The Contradiction Between Old and New, Past and Future

If we consider a process of development as a whole, as, in Stalin's words, "an onward and upward movement" involving at each stage "a transition from an old qualitative state to a new qualitative state," then it reveals itself as the continuous posing and solution of a series of contradictions.

The new stage of development comes into being from the working out of the contradiction and struggle inherent in the old. And the new stage itself contains the germ of a new contradiction. For it comes into being containing something of the past from which it springs and something of the future to which it leads. It has, therefore, its "negative and positive sides, a past and a future, something dying away and something developing." On this basis there once again arises within it "the struggle between the old and the new, between that which is dying away and that which is being born, between that which is disappearing and that which is developing."

Hence development continually drives forward to fresh development; the whole process at each stage is in essence the struggle between the old and the new, that which is dying and that which is being born.

This dialectical character of development is strikingly

exemplified in social development — in, for example, the stage of development with which we ourselves are specially concerned, the development from capitalism to socialism.

The basic contradiction of capitalism is that between socialized production and capitalist appropriation. This itself is the contradiction between the new and the old in society.

Capitalist appropriation carries on the old institution of private property in the implements of production, under which the owner of the implements of production appropriated the product. The artisan owned his tools and his product. This private ownership of the implements of production and of the product by the individual producer is carried over and transformed into the ownership and appropriation by the capitalist. But while private ownership and appropriation is carried on from the former state of society, what is quite new, what is newly born, arising and advancing in capitalist society, is the socialization of production. The old, petty individual production is destroyed; production is carried on in a new socialized way in great workshops by hundreds, thousands and tens of thousands of workers. The old individual producer is expropriated from his means of production (the peasant is turned off his bit of land, the artisan loses his little workshop), yet the means of production are still privately owned and the product still appropriated — by the individual capitalist or capitalist concern. What the capitalist appropriates, however, is no longer the product of his own labour, but the social product of the social labour of others. Hence this private capitalist appropriation now contradicts the new socialized character of production. In this way, as capitalist society comes into being and develops,

the old contradicts the new.

At first capitalism continues to expand, bringing all aspects of economy under its sway and extending its sway over the whole world. But then begins its process of decline. The contradictions reach a breaking point. Capitalism enters into its period of death throes, the general crisis of capitalism. A handful of great monopolists stands opposed to the working class in the capitalist countries; and not only to the working class in the capitalist countries but to the millions of oppressed peoples in the colonial territories. The old masters of the world stand opposed to its future masters — the past to the future. Moreover, rival groups of monopolists stand opposed to one another, as new imperialist claimants to world domination rise and confront the older-established powers. The system begins to break at its weakest points; first in one country, then in a series of countries, the capitalists are overpowered and the new system of socialism begins to arise, so that a new socialist power building up in part of the world confronts the old capitalist power dying but fighting for life in the rest of the world.

Thus the old goes down, fighting against the new. The new grows strong, overpowers and supplants the old. Such is the pattern of development.

The Forward Movement of Development

This pattern of development is the dialectic of forward movement — "in which," as Engels said, "in spite of all seeming accidents and all temporary retrogression, a

progressive development asserts itself in the end."[1] The process moves forward from stage to stage, each stage being a genuine advance to something new, not a falling back to some stage already past.

In this process of development there are processes of advance, the birth and surging forward of the new, and processes of decay, the decline and fall of the old. Of course, there are times and occasions when the process of decay may become paramount, and when the forces of advance are not sufficiently strong to overcome the old and to supplant it. This has occurred in the past, for instance, in the history of society, when civilizations have disintegrated and disappeared, because they decayed and the forces of advance were not strongly enough developed in them to carry them forward. No matter. Despite such "temporary retrogression," the "progressive development asserts itself in the end."

At the present day there are people who talk about the likelihood of "the end of civilization." If we considered only the capitalist forces, such an end might well be expected. If there were no Soviet Union, if there were no People's China, if there were no organized working-class movement, no national liberation movement, no peace movement, then the capitalists would quite certainly destroy their own civilization. But in fact there have already risen and grown tens of millions strong the new forces which will carry civilization forward from capitalism to socialism.

The overall, long-term, forward-moving process of development takes place, not in a straight line, but in a series

[1] Engels, *Ludwig Feuerbach*, Chapter IV.

of zig-zags, of particular and seemingly accidental occurrences, of temporary setbacks; for the development as a whole is but the summation of an entire complex of infinitely various changes and interrelations. If, then, we want to understand how the development proceeds in the concrete case, we have to see it as taking its course through a series of particular, concrete events. On the other hand, if we want to understand these particular events themselves, we should understand them, not in isolation, but in their context within the process of development as a whole.

As concerns particular changes of particular things which take part in the process of development, they do not, of course, all fall into a single pattern of "forward movement." There are manifold comings and goings and interactions of particular things, changes of form and changes of state, changes of one thing into another and destruction of one thing by another, cycles of change which revert again to the original starting point, and so on. Dialectics, as the study of processes in all their concreteness, in all their manifold changes and interconnections, is concerned with all these processes. Here, however, we are concerned with the general laws of the overall process of development, as an "onward and upward movement" manifested in a series of "transitions from an old qualitative state to a new qualitative state."

The Role of Negation in Development

This general forward movement, as we have seen, infinitely complex as it is in detail, takes place through the struggle of the new and the old and the overcoming of the old and dying by the new and rising.

This dialectical conception of development is opposed to the older liberal conception favoured by bourgeois theoreticians. The bourgeois liberals recognize development and assert that progress is a universal law of nature and society. But they see development as a gradual and smooth process, proceeding through a series of easy and imperceptible changes. They may recognize struggle where they cannot help but notice it; but to them it seems an unfortunate interruption of orderly progress, more likely to impede development than to help it forward. For them, what exists has not to be supplanted by what is coming into existence, the old has not to be overcome by the new, but it has to be *preserved,* so that it can gradually improve itself and become a higher existence.

True to this philosophy, which they took over from the capitalists, the Social Democrats strove to preserve capitalism, with the idea that it could imperceptibly grow into socialism; and thus striving to preserve capitalism, they end by fighting, not for socialism, but against it. When the struggle is on, these exponents of social peace and class collaboration cannot avoid struggle: they simply enter into it on the other side.

Comparing the dialectical materialist, or revolutionary, conception of development with this liberal, reformist conception of development, we may say that the one recognizes and embraces, while the other fails to recognize and shrinks from, the role of *negation* in development.

Of course, we cannot assert that the transition from the old state to the new, from one quality to another, must always take place in exactly the same way. For, as we have

already seen, dialectics does not mean applying some preconceived scheme to every process, but, on the contrary, every process has its own dialectic, which must be deduced from the study of the process itself. Thus while dialectics teaches us to recognize how the old supplants the new in a sudden, revolutionary way, by a blow in which the old is abolished and the new established in its place, we must also take into account how the transition to a new quality takes place in a different way — not by a sudden blow, but "by the gradual and prolonged accumulation of the elements of the new quality... and the gradual dying away of the elements of the old quality."[1] Both types of transition are exemplified in nature, and also in society. The gradual process is manifested, for example, as Stalin has recently pointed out, in the development of languages. And again, while fundamental changes in society take place through revolutionary upheavals so long as antagonistic classes exist, such revolutions are no longer necessary after antagonistic classes have been finally abolished in socialist society.

The liberal's mistake lies, not in recognizing the occurrence of gradual changes, but in recognizing nothing else and failing to comprehend the role of negation in development. Dialectics teaches us to understand that the new must struggle with and overcome the old, that the old must give way to and be supplanted by the new — in other words, that the old must be *negated.*

The liberal, who thinks metaphysically, understands

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[1] Joseph Stalin, *Marxism and Linguistics*, Chapter I, New York 1951.

negation simply as saying: "No." To him negation is merely the end to something. Far from meaning advance, it means retreat; far from meaning gain, it means loss. Dialectics, on the other hand, teaches us not to be afraid of negation, but to understand how it becomes a condition of progress, a means to positive advance.

10. The Negation of Negation

The dialectical conception of development through negation is opposed to the liberal conception of development. For the liberal, negation is simply a blow which destroys something. But on the contrary, negation is the condition for positive advance, in which the old is abolished only after it has already produced the conditions for the transition to the new, and in which all the positive achievement belonging to the old stage is carried forward into the new.

Moreover, a stage already passed can be re-created on a higher level as a result of double negation, the negation of the negation. According to the liberal conception of development, if a given stage of development is to be raised to a higher level this must take place gradually and peacefully, without the process of negation. But on the contrary, it is only through a double negation that the higher stage can be reached.

The repetition of the old stage on a higher level taking place through the negation of negation is a comprehensive and important law of development, the operation of which is exemplified in many processes of nature, history and thought.

The Positive Character of Negation

"Negation in dialectics does not mean simply saying no," wrote Engels.[1]

When in the process of development the old stage is negated by the new, then, in the first place, that new stage could not have come about except as arising from and in opposition to the old. The conditions for the existence of

[1] Engels, *Anti-Dühring*, Part I, Chapter XIII.

the new arose and matured within the old. The negation is a positive advance, brought about only by the development of that which is negated. The old is not simply abolished, leaving things as though it had never existed: it is abolished only after it has itself given rise to the conditions for the new stage of advance.

In the second place, the old stage, which is negated, itself constitutes a stage of advance in the forward-moving process of development as a whole. It is negated, but the advance which took place in it is not negated. On the contrary, this advance is carried forward to the new stage, which takes into itself and carries forward all the past achievement.

For example: socialism replaces capitalism — it negates it. But the conditions for the rise and victory of socialism were born of capitalism, and socialism comes into existence as the next stage of social development after capitalism. Every achievement, every advance in the forces of production, and likewise every cultural achievement, which took place under capitalism, is not destroyed when capitalism is destroyed, but, on the contrary, is preserved and carried further.

This positive content of negation is not understood by liberals, for whom negation is "simply saying no." Moreover, they think of negation as coming only from outside, externally. Something is developing very well, and then something else comes from outside and negates it — destroys it. That is their conception. That something by its own development leads to its own negation, and thereby to a higher stage of development — lies outside their comprehension.

Thus the liberals conceive of social revolution not only

as a catastrophe, as an end to ordered progress, but they believe that such a catastrophe can be brought about only by outside forces. If a revolution threatens to upset the capitalist system, that is not because of the development of the contradictions of that system itself, but is due to "agitators."

Of course, there *is* negation which takes the form simply of a blow from outside which destroys something. For instance, if I am walking along the road and am knocked down by a car, I suffer negation of a purely negative sort. Such occurrences are frequent both in nature and in society. But this is not how we must understand negation if we are to understand the positive role of negation in the process of development.

At each stage in the process of development there arises the struggle of the new with the old. The new arises and grows strong within the old conditions, and when it is strong enough it overcomes and destroys the old. This is the negation of the past stage of development, of the old qualitative state; and it means the coming into being of the new and higher stage of development, the new qualitative state.

Negation of Negation

This brings us to a further dialectical feature of development — the negation of negation.

According to the liberal idea that negation "means simply saying no," if the negation is negated, then the original position is restored once more without change. According to this idea, negation is simply a negative, a taking away. Hence if the negation, the taking away, is itself negated, that merely means putting back again what was taken away. If a

thief takes my watch, and then I take it away from him, we are back where we started — I have the watch again. Similarly, if I say, "It's going to be a fine day," and you say, "No, it's going to be a wet day," to which I reply, "No, it's not going to be a wet day," I have simply, by negating your negation, re-stated my original proposition.

This is enshrined in the principle of formal logic, "not not-A equals A." According to this principle, negation of negation is a fruitless proceeding. It just takes you back where you started.

Let us, however, consider a real process of development and the dialectical negation which takes place in it.

Society develops from primitive communism to the slave system. The next stage is feudalism. The next stage is capitalism. Each stage arises from the previous one, and negates it. So far we have simply a succession of stages, each following as the negation of the other and constituting a higher stage of development. But what comes next? Communism. Here there is a return to the beginning, but at a higher level of development. In place of primitive communism, based on extremely primitive forces of production, comes communism based on extremely advanced forces of production and containing within itself tremendous new potentialities of development. The old, primitive classless society has become the new and higher classless society. It has been raised, as it were, to a higher power, has reappeared on a higher level. But this has happened only because the old classless society was negated by the appearance of classes and the development of class society, and because finally class society, when it had gone through its whole

development, was itself negated by the working class taking power, ending exploitation of man by man, and establishing a new classless society on the foundation of all the achievements of the whole previous development.

This is the negation of negation. But it does not take us back to the original starting point. It takes us forward to a new starting point, which is the original one raised, through its negation and the negation of the negation, to a higher level.

Thus we see that in the course of development, as a result of a double negation, a later stage can repeat an earlier stage, but repeat it on a higher level of development.

There is "a development that seemingly repeats the stages already passed, but repeats them otherwise (in a new way), on a higher basis... a development, so to speak, in spirals, not in a straight line."[1]

This is a conception of development, like that of dialectical negation in general, which the liberal outlook cannot stomach. To the liberal outlook development seems to be a smooth, upward course proceeding through a series of small changes. If a given stage of development is to be raised to a higher level, then this must take place gradually and peacefully, through the "harmonious unfolding" of all the higher potentialities latent in the original stage. But on the contrary, the facts show that it is only through struggle and through negation that the higher stage is won. The development takes place not as "a harmonious unfolding" but as "a disclosure of contradictions," in which the lower stage is

[1] V.I. Lenin, *The Teachings of Karl Marx*, New York 1930.

negated — destroyed; in which the development which follows its negation is itself negated; and in which the higher stage is reached only as a result of that double negation.

As Hegel put it, the higher end of development is reached only through "the suffering, the patience and the labour of the negative."[1]

A Comprehensive and Important Law of Development

In discussing the negation of negation we must again stress what was said earlier, namely, that the essence of dialectics is to study a process "in all its concreteness," to work out how it actually takes place, and not to impose on it some preconceived scheme and then try to "prove" the necessity of the real process reproducing the ideal scheme. We do not say in advance that every process will exemplify the negation of negation. Still less do we use this conception to try to "prove" anything.

Referring to Marx's demonstration of the occurrence of the negation of negation in history, Engels said:

"In characterizing the process as the negation of the negation, therefore, Marx does not dream of attempting to prove by this that the process was historically necessary. On the contrary: after he has proved from history that in fact the process has partially already occurred, and partially must occur in the future, he then also characterizes it as a process which develops in accordance with a definite historical law. That is all."[2] Dialectics teaches us that we shall understand

[1] Hegel, *The Phenomenology of Mind*, *Preface.*

[2] Engels, *Anti-Dühring*, Part I, Chapter XIII.

the laws of development of each particular process by studying that process itself, in its development. But when we do that, we shall discover the repetition of the old stage on a higher level taking place through the negation of negation.

"What, therefore, is the negation of the negation?" wrote Engels. "An extremely general — and for this reason extremely comprehensive and important — law of development of nature, history and thought... It is obvious that in describing any evolutionary process as the negation of the negation I do not say anything concerning the *particular* process of development... When I say that all these processes are the negation of negation, I bring them all together under this one law of motion, and for this very reason I leave out of account the peculiarities of each separate process. Dialectics is nothing more than the science of the general laws of motion and development of nature, human society and thought."[1]

How "extremely comprehensive and important" is this law of development can be shown in numerous examples.

We have already seen how the negation of the negation occurs in history in the development from primitive communism to communism. It occurs again in the development of individual property. Marx pointed out that the pre-capitalist "individual private property founded on the labours of the proprietor" is negated — destroyed — by capitalist private property. For capitalist private property arises only on the ruin and expropriation of the pre-capitalist individual producers. The individual producer used to own his

[1] *Ibid.*

instruments of production and his product — both were taken away from him by the capitalists. But when capitalist private property is itself negated — -when "the expropriators are expropriated" — then the individual property of the producers is restored once more, but in a new form, on a higher level.

"This does not re-establish private property for the producer, but gives him individual property based on the acquisitions of the capitalist era, *i.e.* on co-operation and the possession in common of the land and of the means of production."[1]

The producer, as a participant in socialized production, then enjoys, as his individual property, a share of the social product — "according to his labour," in the first stage of communist society, and "according to his needs" in the fully developed communist society.

When capitalism arose, the only way forward was through this negation of negation. Some of the British Chartists put forward in their land policy demands aimed at arresting the new capitalist process and at restoring the *old* private property of the producer. This was vain. The only road forward for the producers was by the struggle against capitalism and for socialism — not to restore the *old* individual property which capitalism had destroyed, but to destroy capitalism and so create individual property again on a *new,* socialist basis.

Again, in the history of thought, the "primitive, natural materialism" of the earliest philosophers is negated by

[1] Marx, *Capital*, Vol. I, Chapter XXXII.

philosophical idealism, and modern materialism arises as the negation of that idealism.

"This modern materialism, the negation of negation, is not the mere re-establishment of the old, but adds to the permanent foundations of this old materialism the whole thought content of two thousand years of development of philosophy and natural science."[1]

The negation of negation, as Engels also pointed out, is a very familiar phenomenon to the plant breeder. If he has some seed and wants to get from it some better seed, then he has to grow the seed under definite conditions for its development — which means bringing about the negation of the seed by its growing into a plant and then controlling the conditions of development of the plant until it brings about its own negation in the production of more seed.

Some experts, it is true, have lately advocated going another and more direct way about it, namely, changing the seed directly by treating it with chemicals or X-rays. The result of this, however, is simply a number of haphazard changes in the properties of the seed, and not a controlled process of development.

"Furthermore, the whole of geology is a series of negated negations," wrote Engels, "a series arising from the successive shattering of old and the depositing of new rock formations... But the result of this process has been a very positive one: the creation, out of the most varied chemical elements, of a mixed and mechanically pulverized soil which makes possible the most abundant and diverse vegetation."

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[1] Engels, Anti-Dühring, Part I, Chapter XIII.

"It is the same in mathematics," he continued. If you want to raise a number *a* to a higher power, then this can be done by first operating on *a* so as to get — *-a,* and then making the additional operation of multiplying — *a* by itself, which results in a^2. Thus a^2, the second power of *a,* is reached by a negation of negation. In this case it is also possible to get a^2 from *a* by a single process, namely, multiplying *a* by *a.* Nevertheless, as Engels pointed out, "the negated negation is so securely entrenched in a^2 that the latter always has two square roots, namely *a* and — *a.*"[1]

The negation of negation is found in the series of chemical elements, in which properties of elements of lower atomic weight disappear and then reappear again in elements of higher atomic weight.

And the development of life itself obeys the law of negation of negation. The most primitive living organisms are comparatively speaking immortal, continuing themselves in being by continually dividing. The development of higher organisms, with sexual reproduction, was possible only at the cost of death. The organism becomes mortal. The higher development of life takes place through its negation, death.

And after that, these mortal organisms advance further. The process of the evolution of species of plants and animals begins. With the birth of man, social evolution begins, the whole process of social development from primitive communism, through its negation, class society, to the classless society of communism. Moreover, man begins to master nature. And when, with communism, he brings his own social

[1] *Ibid.*

organization under his own conscious control, then an entirely new epoch in the evolution of life opens up.

11. Criticism and Self-Criticism

Development through contradiction, the struggle between the new and the old, will continue to be the rule in the future development of communist society. But with the ending of all exploitation of man by man, this development will no longer take place through violent social conflicts and upheavals but through the rational method of criticism and self-criticism, which will become the new level of development.

From the whole discussion of the Marxist dialectical method the conclusion follows that Marxism is a creative science which must continually advance in application to new conditions of development. Criticism and self-criticism lies at the very heart of the Marxist dialectical method.

A New Type of Development

What, now, of the future development of society, after the stage of communism has been reached? Are we to suppose that the same dialectical laws of development will continue to operate? Or that development will cease?

Development will not cease. On the contrary, it is only with the achievement of communism that human development in the proper sense, that is to say, a development consciously planned and controlled by men themselves, really begins; all the rest was only the painful preparation for it, the birth-pangs of the human race.

When all the means of production are brought fully under planned social direction, then it may be expected that men's mastery over nature will enormously increase, and the conquest and transformation of nature by man will in turn mean profound changes in men's mode of life. For instance,

ability to produce an absolute abundance of products with a minimum expenditure of human labour, abolition of the antithesis between town and countryside, abolition of the antithesis between manual and intellectual labour, clearly imply profound changes in social organization, in outlook, in habits, in mode of life generally. But the effecting of such changes cannot but involve, at each stage, the overcoming of forms of social organization, of outlooks and habits, belonging to the past. Development, therefore, will continue to take place through the disclosure of contradictions, the struggle between the new and the old, the future and the past. How else can we expect things to move forward? New tendencies will arise out of the existing conditions at each stage, which will come into contradiction with the existing conditions and hence lead to their passing and giving way to new conditions.

But there is no reason to expect that this development will take place, as hitherto, through violent conflicts and social upheavals.

On the contrary, with communism there will have taken place, as Engels expressed it, "humanity's leap from the realm of necessity into the realm of freedom." And that means that the elemental conflicts characteristic of the "realm of necessity" will give place to changes controlled and planned.

"The laws of his own social activity, which have hitherto confronted him as external, dominating laws of nature, will then be applied by man with complete understanding, and hence will be dominated by man. Men's own social organization which has hitherto stood in opposition to them as if

arbitrarily decreed by nature and history, will then become the voluntary act of men themselves... men with full consciousness will fashion their own history."[1]

When men understand the laws of their own social organization and have it under their own co-operative control, when there is no exploitation of man by man, when what is new and rising and its contradiction with the old is fully understood, then it is possible to do away with old conditions and create new conditions in a deliberate and planned way, without conflict or upheaval. Contradiction and the overcoming of the old by the new remain; but the element of antagonism and conflict as between men in society disappears and gives way to the properly human method of deciding affairs by rational discussion — criticism and self-criticism.

This mode of social development is already beginning in the Soviet Union today.

"In our Soviet society," said A. A. Zhdanov, "where antagonistic classes have been liquidated, the struggle between the old and the new, and consequently the development from the lower to the higher, proceeds not in the form of struggle between antagonistic classes and of cataclysms, as is the case under capitalism, but in the form of criticism and self-criticism, which is the real motive force of our development, a powerful instrument in the hands of the Communist Party. This is incontestably a new aspect of

[1] Engels, *Anti-Dühring*, Part III, Chapter II; *Socialism, Utopian and Scientific*, Chapter III.

movement, a new type of development, a new dialectical law."[1]

Human Perspectives

In the first phase of the transition from socialism to communism, development takes place through continued struggle against the old heritage of capitalism.

What will happen when the last traces of old class society have been obliterated throughout the world? We can at all events predict certain initial features of the development of world communist society — associated humanity. Thus the organization of the state and of a government party will become outmoded, and state and party will disappear. This was already foreseen by Marx and Engels.

Again, Stalin has pointed out that the fullest development of national cultures and national languages, which is the task first arising from the abolition of the national oppression of capitalism, will provide the basis for an eventual universal human culture and human language. When "socialism has become part and parcel of the life of the peoples, and when practice has convinced the nations of the superiority of a common language over national languages," then "national differences and languages will begin to die away and make room for a world language, common to all nations."[2]

As for the more remote future, we have no data on

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[1] Zhdanov, *Essays on Literature, Philosophy, and Music*, Chapter II.

[2] Joseph Stalin, *The National Question and Leninism*, New York 1951.

which to base predictions — though we can be quite sure that vast changes will take place, and that the people of the future, masters of nature and knowing no oppression of man by man, will be well able to look after the destinies of the human race.

Bernard Shaw, in his *Back to Methuselah,* speculated on the possibility of the span of human life being greatly extended, and eventually extended indefinitely. True, he thought this would happen through the mysterious operation of "the life force." Yet it was a profound speculation, for such a result may well be brought about through the development of physiological knowledge and medical science. And Shaw was quite right in supposing that such a development would make a tremendous difference in the whole mode of human life and in all social institutions. This is, indeed, one of the ways in which the advance of science and of men's mastery over nature (our own nature, in this case) could lead to developments of vast, transforming significance for human life and society.

At all events, we cannot set limits to the powers of human achievement. And bearing this in mind, we may well believe that our descendants a few hundred generations hence will in their manner of life resemble us far less than we resemble our own ancestors among the primitive savages.

Creative Marxism

With this, we may try to sum up the main conclusions about dialectics.

Dialectics is concerned with interconnection, change and development. Understood in the materialist way,

dialectics is "the science of the general laws of motion and development of nature, human society and thought."

The dialectical method is the method of approach by the application of which we advance our materialist understanding of nature and history, and all particular processes of nature and history. It is a *method* — not a general formula, and not an abstract philosophical system. It guides us in understanding things so as to change them.

Such being the nature of dialectics and of the dialectical method, it should be clear that the science of dialectics itself grows and develops, and that the method is enhanced and enriched with each further application. Every new social development and every new advance of the sciences and the arts provides the basis for enriching and extending the understanding of dialectics and of the dialectical method. We cannot understand and master new material simply by repeating what has already been learned, but on the contrary, we learn more, and extend, correct and enrich our ideas in the light of new problems and new experiences.

Thus Marxism is a developing, progressive science.

"There is dogmatic Marxism and creative Marxism. I stand by the latter," said Stalin.[1]

Creative Marxism:

"Concentrates its attention upon... the path and means of realizing Marxism for various situations, changing the path and means when the situation changes... It takes its directives and guiding lines not from historical analogies and

[1] See *History of the Communist Party of the Soviet Union*, Chapter VII, Section 4, New York 1939.

parallels, but from the study of surrounding conditions. In its activities it relies, not on quotations and aphorisms but on practical experience, testing every step it takes by experience, learning from its mistakes and teaching others to build a new life."[1]

"Mastering the Marxist-Leninist theory means assimilating *the substance* of this theory and learning to use it in the solution of the practical problems of the revolutionary movement under the varying conditions of the class struggle of the proletariat.

"Mastering the Marxist-Leninist theory means being able to enrich this theory with the new experience of the revolutionary movement, with new propositions and conclusions, it means being able *to develop it and advance it* without hesitating to replace — in accordance with the substance of the theory — such of its propositions and conclusions as have become antiquated by the new ones corresponding to the new historical situation."[2]

Creative Marxism is the very opposite of revisionism. This must be stressed, because revisionism usually begins by announcing that Marxism "must not become a dogma." Revisionism means going backward from Marxism: in the name of opposing dogmas, it abandons Marxism in favour of the dogmas of bourgeois theory. Creative Marxism preserves and cherishes the substance of the Marxist materialist theory. Thus Stalin said of Lenin:

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[1] Joseph Stalin, Lenin, "Lenin as Organizer and Leader of the Communist Party," New York 1934.

[2] *History of the Communist Party of the Soviet Union,* Conclusion.

"Lenin was, and remains, the most loyal and consistent pupil of Marx and Engels, and he wholly and entirely based himself on the principles of Marxism. But Lenin did not merely carry out the doctrines of Marx and Engels. He was also the continuator of these doctrines... He developed the doctrines of Marx and Engels still further in application to the new conditions of development."[1]

Criticism and Self-Criticism, a Lever of Progress

In order, then, to master the method of Marxism-Leninism, the method of dialectics, we must use it and develop it in use. And this demands criticism and self-criticism in all spheres of theoretical and practical activity.

Criticism and self-criticism, which belongs at the very heart of the Marxist dialectical method, means that theory and practice must always be matched up one with the other. Theory must not be allowed to lag behind practice; theory must keep not only level with practice but in advance of it, so as to serve as a true and reliable guide. Practice must not be allowed to grope in the dark without the light of theory, nor to be distorted by wrong and antiquated theory. And this matching up of theory and practice can only be achieved by constant alertness, by constant readiness to criticize and to learn, by continuous check-up of ideas and actions both from above and from below, by readiness to recognize what is new and to correct or cast aside what is old and no longer applicable, by frank recognition of mistakes. Mistakes are inevitable. But by the check up which recognizes mistakes

[1] Stalin, *Interview with the First American Labour Delegation,* 1927.

in time, by examining critically the roots of those mistakes and correcting them, by learning from mistakes, we advance to new successes.

"A party is invincible," wrote Stalin, "if it does not fear criticism and self-criticism, if it does not gloss over the mistakes and defects in its work, if it teaches and educates its cadres by drawing the lessons from the mistakes in party work, and if it knows how to correct its mistakes in time."[1]

Mistakes are seldom mere accidental errors of judgement. Most often mistakes arise because we cling to old habits and old formulations which have become antiquated and inapplicable to new conditions and new tasks. When this happens, and when, as a result, things do not turn out as anticipated, then, if we are ready critically to examine what has gone wrong, we learn something new and grow in strength, stature and experience.

"We are advancing in the process of struggle, in the process of the development of contradictions, in the process of overcoming these contradictions, in the process of bringing these contradictions to light and liquidating them," said Stalin.

"Something in life is always dying. But that which is dying refuses to die quietly; it fights for its existence, defends its moribund cause.

"Something new in life is always being born. But that which is being born does not come into the world quietly; it comes in squealing and screaming, defending its right to existence.

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[1] *History of the Communist Party of the Soviet Union,* Conclusion.

"The struggle between the old and the new, between the dying and the nascent — such is the foundation of development. By failing openly and honestly, as befits Bolsheviks, to point to, to bring to light, the defects and mistakes in our work, we close our road to progress. But we want to go forward. And precisely because we want to go forward, we must make honest and revolutionary self-criticism of our most important tasks. Without this there is no progress. Without this there is no development."[1]

[1] Joseph Stalin, *Report to Fifteenth Congress of the Communist Party of the Soviet Union.*

12. Dialectical Materialism and Science

Dialectical materialism is a scientific world outlook. Its scientific character is manifested especially in that it turns socialism into a science and, by developing the science of society, shows how the whole of science can be developed in the service of mankind. In general, dialectical materialism is a scientific world outlook in that it does not seek to establish any philosophy "above science" but bases its conception of the world on the discoveries of the sciences.

The entire advance of the sciences is an advance of materialism against idealism; and further, science shows that our materialist conception of the world must be dialectical. Such great past discoveries as the law of the transformation of energy, the Darwinian theory of evolution and the theory of the cell have demonstrated the dialectic of nature.

Nevertheless science in the capitalist world has entered into a state of crisis, due primarily to (1) the subjugation of scientific research to the capitalist monopolies and to military purposes, and (2) the conflict between new discoveries and old idealist and metaphysical ideas. Dialectical materialism is not only a generalization of the achievements of science, but a weapon for the self-criticism and for the advancement of science.

A Scientific World Outlook

Dialectical materialism, the world outlook of the Marxist-Leninist party, is a truly scientific world outlook. For it is based on considering things as they are, without arbitrary, preconceived assumptions (idealist fantasies); it insists that our conceptions of things must be based on actual investigation and experience, and must be constantly tested and re-

tested in the light of practice and further experience.

Indeed, "dialectical materialism" means: understanding things just as they are ("materialism"), in their actual interconnection and movement ("dialectics").

The same cannot be said about other philosophies. They all make arbitrary assumptions of one kind or another, and try to erect a "system" on the basis of those assumptions. But such assumptions are arbitrary only in appearance; in fact they express the various prejudices and illusions of definite classes.

The scientific character of Marxism is manifested especially in this, that it makes *socialism* into a *science*.

We do not base our socialism, as the utopians did, on a conception of abstract human nature. The utopians worked out schemes for an ideal society, but could not show how to achieve socialism in practice. Marxism made socialism into a science by basing it on an analysis of the actual movement of history, of the economic law of motion of capitalist society in particular, thus showing how socialism arises as the necessary next stage in the evolution of society, and how it can come about only by the waging of the working-class struggle, through the defeat of the capitalist class and the institution of the dictatorship of the proletariat.

Thus Marxism treats man himself, society and history, scientifically.

"Socialism, having become a science, demands the same treatment as every other science — it must be studied. The task of the leaders will be to bring understanding, thus acquired and clarified, to the working masses, to spread it with increased enthusiasm, to close the ranks of the party

organizations and of the labour unions with even greater energy."[1]

Scientific study of society shows that human history develops from stage to stage according to definite laws. Men themselves are the active force in this development. By understanding the laws of development of society, therefore, we can guide our own struggles and create our own socialist future.

Thus scientific socialism is the greatest and most important of all the sciences.

The practitioners of the natural sciences are now getting worried because they feel that governments do not know how to put their discoveries to proper use. They have good cause to worry about this. Science is discovering the secrets of atomic energy, for example; but its discoveries are being used to create weapons of destruction. Many people are even coming to believe that it would be better if we had no science, since its discoveries open up such terrifying possibilities of disaster.

How can we insure that the discoveries of science are put to proper use for the benefit of mankind? It is scientific socialism, Marxism-Leninism, alone which answers this problem. It teaches us what are the forces which make history and thereby shows us how we can make our own history today, change society and determine our own future. It teaches us, therefore, how to develop the sciences in the service of mankind, how to carry them forward in today's crisis.

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[1] Frederick Engels, *Peasant War in Germany*, Preface to the second edition, New York 1926.

Physics can teach us how to release atomic energy, it cannot teach us how to control the social use of that energy. For this there is required, not the science of the atom, but the science of society.

Science and Materialism

Dialectical materialism is in no sense a philosophy "above science."

Others have set philosophy "above science," in the sense that they have thought they could discover what the world was like just by thinking about it, without relying on the data of the sciences, on practice and experience. And then, from this lofty standpoint, they have tried to dictate to the scientists, to tell them where they were wrong, what their discoveries "really meant," and so on.

But Marxism makes an end of the old philosophy which claimed to stand above science and to explain "the world as a whole."

"Modern materialism... no longer needs any philosophy standing above the sciences," wrote Engels. "As soon as each separate science is required to get clarity as to its position in the great totality of things and of our knowledge of things a special science dealing with this totality is superfluous."[1]

Dialectical materialism, he further wrote:

"Is in fact no longer a philosophy, but a simple world outlook which has to establish its validity and be applied not in a science of sciences standing apart, but within the positive sciences... Philosophy is therefore... 'both overcome and

[1] Engels, *Anti-Dühring*, Introduction, I.

preserved'; overcome as regards its form, and preserved as regards its real content."[1]

Our picture of the world about us, of nature, of natural objects and processes, their interconnections and laws of motion, is not to be derived from philosophical speculation, but from the investigations of the natural sciences.

The scientific picture of the world and its development is not complete, and never will be. But it has advanced far enough for us to realize that philosophical speculation is superfluous. And we refuse to fill in gaps in scientific knowledge by speculation.

For instance, we do know that life is the mode of existence of certain types of organic bodies — proteins; but we do not yet know exactly how such bodies, how life, originated. It is no use speculating about this; we will have to find out, the hard way, by intensive scientific investigation. Only so will we come to understand "the mystery of life." Thus:

"Science is already able to control life, can control living and dead protein. But science cannot yet say definitely what protein is, what life is, as to the derivation of it. Why? Engels in his day put it excellently when he said that 'in order to gain an exhaustive knowledge of what life is, we should have to go through all the forms in which it appears, from the lowest to the highest.' Consequently, in order to understand and learn what protein is, it is also necessary to go through all the forms of manifestation, from the lowest to the highest. And for this we need *experiment, experiment and again*

[1] *Ibid.*, Part I, Chapter XIII.

experiment."[1]

The growing picture of the world which natural science unfolds is a materialist picture — despite the many efforts of bourgeois philosophers to make out the contrary. For step by step as science advances it shows how the rich variety of things and processes and changes to be found in the real world can be explained and understood in terms of material causes, without bringing in God or spirit or any supernatural agency.

Every advance of science is an advance of materialism against idealism, a conquest for materialism — although when driven out of one position idealism has always taken up another position and manifested itself again in new forms, so that in the past the sciences have never been consistently materialist.

For every advance of science means showing the order and development of the material world "from the material world itself."

Science and Dialectics

As science has advanced, not only has this materialist picture of the world become less shadowy, more definite and more convincing, but Engels pointed out: "With each epoch-making discovery even in the sphere of natural science materialism has to change its form."[2]

The discoveries of the natural sciences over the past

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[1] T.D. Lysenko and others, *The Situation in Biological Science, Speech of S.G. Petrov*, August 2, 1948, New York 1949. The quotation from Engels is from *Anti-Dühring*, Part I, Chapter VIII.

[2] Engels, *Ludwig Feuerbach*, Chapter II.

hundred years or more have this significance — that the materialist picture which they unfold is a dialectical one.

Thus Engels wrote:

"The revolution which is being forced on theoretical natural science by the mere need to set in order the purely empirical discoveries... is of such a kind that it must bring the dialectical character of natural events more and more to the consciousness even of those... who are most opposed to it."[1]

"Nature is the test of dialectics, and it must be said for modern natural science that it has furnished extremely rich and daily increasing materials for this test, and has thus proved that in the last analysis nature's process is dialectical."[2]

Three great discoveries of science in the nineteenth century above all contributed to this result, Engels pointed out.[3] These were:

The discovery that the cell is the unit from whose multiplication and division the whole plant or animal body develops (announced by Schwann in 1839).

The law of the transformation of energy (announced by Mayer in 1845).

The Darwinian theory of evolution (announced in 1859).

Let us briefly consider the dialectical significance of these discoveries.

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[1] Engels, *Anti-Dühring*, Preface.

[2] *Ibid.*, Introduction.

[3] Engels, *Ludwig Feuerbach*, Chapter IV.

First, the transformation of energy.

It used to be thought that heat, for example, was a "substance," which passed in and out of bodies; and that electricity, magnetism and so on were separate "forces," acting on bodies. In this way different types of physical processes were considered each separate from the other, in isolation. Each was placed in a separate compartment as the manifestation of a separate "substance" or "force" and their essential interconnection wan not understood.

But science in the nineteenth century, with the principle of the conservation and transformation of energy, discovered that: "mechanical force... heat, radiation (light or radiant heat), electricity, magnetism and chemical energy are different forum of manifestation of universal motion, which pass into one another in definite proportions so that in place of a certain quantity of one which disappears a certain quantity of another makes its appearance, and thus the whole motion of nature is reduced to this incessant process of transformation from one form into another."[1]

The clue to this discovery was not found in any abstract philosophy, by any process of pure thought. No, it was closely related to the development of steam engines and to the working out of their principles of operation.

In a steam engine the burning of coal releases heat energy, which heats up steam, which is then forced through a cylinder where it drives the piston forward and turns the wheels of the engine. Heat is transformed into mechanical motion.

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[1] *Ibid.*

Where did the energy released from the coal come from? We now know that it came from the sun's radiations, was stored up in the plants which formed the coal seams, and was finally released when the coal was burned. A lot of it came from the solar atoms in the process of building heavier elements from hydrogen in the interior of the sun.

This discovery was first formulated as a conservation law — energy cannot be created or destroyed, the quantity which disappears in one form reappears in another form. But it is fundamentally, as Engels pointed out, a transformation law — one form of motion of matter is transformed into another.

Thus physics becomes a science of transformations — no longer studying the different types of physical processes, or forms of motion, each in isolation, but studying their interconnections and how one is transformed into another.

(Transformation laws are laws of motion and interconnection, concerning the interconnection of the forms of motion of matter and their passage one into the other; they are not laws of the transformation of quantity into quality. Knowledge of the transformation laws is essential for understanding the passage from quantity to quality in particular cases. For example, knowledge of the laws of the transformation of heat into mechanical motion will show how much heat energy must be released before enough steam-pressure is generated to drive the piston.)

The Darwinian theory of evolution is in the same way dialectical and materialist.

In place of separate species, each created by God, Darwin showed us a picture of the evolutionary development of

species by means of natural selection. The sharp divisions were broken down, it was shown how species are inter-related and how living nature is transformed. For instance, the swimming-bladder of the fish becomes the lung of the land animal, the scales of the reptile become the feathers of the bird, and so on.

Closely related to this was the development of geology, which also became an evolutionary science, studying the evolution of the earth's crust.

Lastly, the discovery that the cell was the unit from whose multiplication and division the whole plant or animal body developed replaced the older conception of the body as made up of separate tissues. The cell theory was also a theory of motion and interconnection, showing how all the tissues and organs arose by differentiation.

Thus we see how natural science, step by step, unfolds a picture of nature's dialectic.

When we say "a picture," we must add that it is a picture in the sense that, so far as it goes, it is a faithful image. But we did not make it by just observing nature and writing down what we observed, nor does it serve as something which we merely admire, an object of contemplation and intellectual enjoyment.

It is sometimes said that the essential feature of science is that it is based on observations. Of course, science is based on observations; but this is not its most essential feature. The basis of science is not mere observation, but experiment. Science is based on an activity of interfering with nature, changing it — and we learn about things, not just by observing them, but by changing them.

Thus science would never have found out the secrets of the transformation of heat into mechanical motion solely by observing nature. They were found out as a result of building steam engines; we learned the secrets of the process in proportion as we ourselves learned how to reproduce that process.

Nor could Darwin have written *The Origin of Species* on the sole basis of the observations he made on the voyage of the *Beagle.* He made use of the practical experience and results of English animal breeders and plant breeders.

The scientific picture is based, not just on observing things, but on changing them.

And we test it, develop it and use it also in changing nature. Science is not a dogma, but a guide to action. On the other hand, if it becomes divorced from practice, it degenerates into a dogma.

Natural science, then, proves that nature's process is dialectical, and gives us an ever more concrete, detailed picture of the real dialectical motion and interconnection in nature.

The Crisis of Science in the Capitalist World

But, while pointing this out, Engels also pointed to the very great confusion which exists in the sciences.

"The scientists who have learned to think dialectically are still few and far between, and hence the conflict between the discoveries made and the old traditional mode of thought is the explanation of the boundless confusion which now reigns in theoretical natural science and reduces both

teachers and students, writers and readers to despair."[1]

This confusion has become very much worse today. In fact, as the general crisis of capitalism has developed and become more acute, so has the confusion in scientific theory and the distortion of scientific practice developed and increased with it.

Science which by its discoveries lays bare the true dialectics of nature is nevertheless in a state of crisis in the capitalist world.

What is the nature of this crisis? It has a double nature.

In the first place, science is an activity of research and discovery. In capitalist society it has grown enormously, along with the other forces of production. Scientific research can no longer be carried out by individuals on their own: it requires great institutes, vast equipment, elaborate organization, big financial expenditure.

But the more scientific research expands and the greater these requirements become, the more it falls under the control of the monopolies and of their governments, and particularly of the military.

Science has to contribute to profits and to war. Such science as does not so contribute is increasingly starved of the resources necessary to carry on.

"For example, the whole important field of plant physiology remains relatively undeveloped. This is, to put it crudely, because there is no money in it. The state of agriculture under capitalism is such that the conditions are not created for fundamental researches in this field... It is

[1] Engels, *Anti-Dühring*, Introduction.

interesting to note, too, that while some fields of science are neglected because there is no money in them, others suffer because there is too much. Thus geo-chemistry is hampered, for instance, because the very powerful oil interests impose conditions of secrecy on such researches. Science is called upon to answer just those particular problems in which the capitalist monopolies are interested, which is by no means the same as answering the problems which are bound up with the further development of science and with the interests of the people. This warps the whole development of science."[1]

Thus science becomes more and more commercialized — and militarized. And as a result science is more and more disorganized and distorted. This is what is happening to science in the capitalist world. Science can contribute mightily, not only to giving us knowledge, but through that knowledge to human welfare, to developing our powers of production, to conquering disease. Yet it is not being developed as it could be toward these ends.

How can the disorganization and distortion of science be overcome?

We can and must resist the misuse of science here and now. But only the advance to socialism can ensure the full development and use of science in the service of mankind. Just as socialism means that the development of all the forces of production can be planned and organized in the service of man, not for profit and war, so it means the same for

[1] J.D. Bernal and Maurice Cornforth, *Science for Peace and Socialism*, London 1948.

science in particular.

The second aspect is that of theory — the crisis of scientific ideas.

How does this arise?

The primary role of science is to discover the interconnections and laws operating in the world, so as to equip men with the knowledge necessary to improve their production and live better and more fully.

But to develop research and formulate discovery, ideas are necessary. To work out and guide the strategy of advance of science, theory is necessary.

And in this sphere of ideas and theory, the great achievements of science in capitalist society come into collision with the traditional forms of bourgeois ideology.

As Engels stated, there develops "the conflict between the discoveries made and the old traditional modes of thought."

In two words, the *idealism* and the *metaphysics* characteristic of and ingrained in bourgeois ideology have penetrated deeply into the ideas and theories of the sciences.

Thanks to the way in which, in field after field, scientific discovery reveals the real dialectic of nature, it follows that, as Engels put it, the further development of scientific discovery demands "the dialectical synthesis."[1] But this would carry theory far beyond the limits imposed on it by the bourgeois outlook.

The New Against the Old in Science

[1] Engels, *Anti-Dühring*, Preface.

So it is that we find that in field after field bourgeois science turns back from its own achievements, gives up vantage grounds won, and instead of going forward suffers a theoretical collapse. Here, indeed, is a case of the struggle of the new against the old — of advancing scientific discovery against the old ideas in terms of which scientific theory is formulated. Understanding it thus, we can be quite sure that the retrogressive trend will be but temporary, and that the advance of science will break through the barriers of old ideas and outworn dogmas.

In biology, it was the fate of the Darwinian theory to have a dogma imposed on it — the theory of the gene. The same thing happened to the cell theory, with Virchow's dogma that the cell comes only from the cell. In each case a dialectical theory of development had imposed on it a metaphysical dogma which denied development.

In physics, the great discoveries about the electron, the atomic nucleus, the quantum of action — about physical transformations — were interpreted, and not by idealist philosophers alone but by theoretical physicists, as meaning that matter had disappeared and that the limits of investigation had been reached. In the allied science of cosmology, scientists, having found out so much about the universe and its development, began to have recourse to ideas of creation.

In all these cases, a dogma is imposed upon science, strangling its further development. Hence the crisis.

The "crime" of Soviet science is that it is successfully challenging and removing such dogmas.

In the Soviet Union scientists have followed Stalin's wise advice, when he called for the progress of:

"Science whose devotees, while understanding the power and significance of the established scientific traditions and ably utilizing them in the interests of science, are nevertheless not willing to be slaves of these traditions; the science which has the courage and determination to smash the old traditions, standards and views when they become antiquated and begin to act as a fetter on progress, and which is able to create new traditions, new standards and new views."[1]

[1] Joseph Stalin, *Speech to Higher Educational Workers*, delivered in 1938.

Conclusions

We have now briefly surveyed the principal features of the Marxist materialist conception of the world and of the Marxist dialectical method. What conclusions can we draw at this stage?

(1) The world outlook of dialectical materialism is a consistent and reasoned outlook, which derives its strength from the fact that it arises directly from the attempt to solve the outstanding problems of our time.

The epoch of capitalism is an epoch of stormy development in society. It is marked by revolutionary advances of the forces of production and of scientific discovery, and by consequent uninterrupted disturbance of all social conditions. This sets one theoretical task above all, and that is to arrive at an adequate conception of the laws of change and development in nature and society.

To this theoretical task dialectical materialism addresses itself.

(2) This is not the task of working out a philosophical system, in the old sense. What is required is not any system of ideas spun out of the heads of philosophers, which we can then admire and contemplate as a system of "absolute truth."

Capitalist society is a society rent with contradictions, and the more it has developed, the more menacing and intolerable for the working people have the consequences of these contradictions become. The new powers of production are not utilized for the benefit of society as a whole but for the profit of an exploiting minority. Instead of leading to universal plenty, the growth of the powers of production

leads to recurrent economic crises, to unemployment, to poverty and to hideously destructive wars.

Therefore the philosophical problem of arriving at a true conception of the laws of change and development in nature and society becomes, for the working people, a practical political problem of finding how to change society, so that the vast new forces of production can be used in the service of humanity. For the first time in history the possibility of a full and rich life for everyone exists. The task is to find how to make that possibility a reality.

It is to the solution of this practical task that the theory of dialectical materialism is devoted.

(3) Addressing itself to this task, dialectical materialism is and can only be a partisan philosophy, the philosophy of a party, namely, of the party of the working class, whose object is to lead the millions of working people to the socialist revolution and the building of communist society.

(4) Dialectical materialism cannot but stand out in sharp contrast to the various contemporary schools of bourgeois philosophy.

What have these various schools of philosophy to offer at the present time? Systems and arguments by the bucketful — none of them either original or cogent, if one takes the trouble to analyse them closely. But no solution to the problems pressing upon the people of the capitalist countries and the colonies. How to end poverty? How to end war? How to utilize production for the benefit of all? How to end the oppression of one nation by another? How to end the exploitation of man by man? How to establish the brotherhood of men? These are our problems. We must judge

philosophies by whether or not they show how to solve them. By that criterion, the philosophical schools of capitalism must one and all be judged — "weighed in the balance and found wanting."

The prevailing bourgeois philosophies, with all their differences, have in common a retreat from the great positive ideas which inspired progressive movements in the past. They emphasize men's helplessness and limitations; they speak of a mysterious universe; and they counsel either trust in God or else hopeless resignation to fate or blind chance. Why is this? It is because all these philosophies are rooted in acceptance of capitalism and cannot see beyond capitalism. From start to finish they reflect the insoluble crisis of the capitalist world. And their function is to help entangle the people "in a web of lies."

(5) Dialectical materialism asks to be judged and will be judged by whether it serves as an effective instrument to show the way out of capitalist crisis and war, to show the way for the working people to win and wield political power, to show the way to build a socialist society in which there is no more exploitation of man by man and in which men win increasing mastery over nature.

Dialectical materialism is a philosophy of practice, indissolubly united with the practice of the struggle for socialism.

It is the philosophy born out of the great movement of our times — the movement of the people who labour, who "create all the good things of life and feed and clothe the world," to rise at last to their full stature. It is wholly, entirely dedicated to the service of that movement. This is the

source of all its teachings, and in that service its conclusions are continually tried, tested and developed. Without such a philosophy, the movement cannot achieve consciousness of itself and of its tasks, cannot achieve unity, cannot win its battles.

Since the greatest task facing us is that of ending capitalist society and building socialism, it follows that the chief problem to which dialectical materialism addresses itself, and on the solution of which the whole philosophy of dialectical materialism turns, is the problem of understanding the forces of development of society. The chief problem is to reach such an understanding of society, of men's social activity and of the development of human consciousness, as will show us how to achieve and build the new socialist society and the new socialist consciousness. The materialist conception and dialectical method with which we have been concerned in this volume are applied to this task in the materialist conception of history and in the Marxist-Leninist theory of knowledge. These will form the subject matter of the second volume.

Bibliography

We mention here only works by Marx, Engels, Lenin, and Stalin in which the general underlying principles of dialectical materialism are expounded and developed.

The best general introduction is contained in Engels' *Socialism, Utopian and Scientific* and in Stalin's *Anarchism or Socialism?* After these it is necessary to study the *Communist Manifesto,* by Marx and Engels.

It is advisable to become acquainted with these three works before studying the two short books in which the basic ideas of dialectical materialism are brought together and summarized — Lenin's *The Teachings of Karl Marx* and Stalin's *Dialectical and Historical Materialism.* The latter is of absolutely fundamental importance for the student, containing as it does a systematic exposition of the principal features of the Marxist dialectical method, Marxist philosophical materialism and the Marxist science of history, generalizing the conclusions of the whole experience of the application and development of Marxist theory in the course of the working-class struggle for socialism.

The place occupied by dialectical materialism in the whole theory and practice of Marxism is dealt with in Lenin's "The Three Sources and Three Component Parts of Marxism," in connection with which should also be read his "Marxism and Revisionism" (both in Lenin, *Selected Works,* Vol. 11).

The creative, developing character of Marxism, and the role of history in the working-class movement are dealt with in the "Conclusion" of Stalin's *History of the Communist Party of the Soviet Union.*

The essential difference between materialism and idealism, between dialectical and mechanistic materialism, and between the Marxist and Hegelian dialectics is to be found in Engels' *Ludwig Feuerbach,* with its appendix, Marx's "Eleven Theses on Feuerbach."

Along with this we may draw attention to Engels' "Introduction" to *Dialectics of Nature,* and to Lenin's "The Attitude of the Workers' Party toward Religion" (*Selected Works,* Vol. 11).

Of fundamental importance then are three longer and more difficult works: Engels' *Anti-Dühring,* especially Part I; Engels' *Dialectics of Nature;* Lenin's *Materialism and Empirio-Criticism.*

A part of Lenin's *Philosophical Notebooks* is translated into English under the title "On Dialectics"; and he deals with the fight for materialism in "On the Significance of Militant Materialism" (both in *Selected Works,* Vol. 11). Important statements summarizing the essentials of the dialectical method are contained in Lenin's "One Step Forward, Two Steps Back," Section R, "Something About Dialectics" (*Selected Works,* Vol. 2), and "Once Again on the Trade Unions," section on "Dialectics and Eclecticism" (*Selected Works,* Vol. 9). See also Lenin's "What the 'Friends of the People' Are and How They Fight for the Social Democrats" (*Selected Works,* Vol. 11), which is concerned mainly with historical materialism, the subject of the next volume.